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AMERICAN ARTISAN and Hardware Record

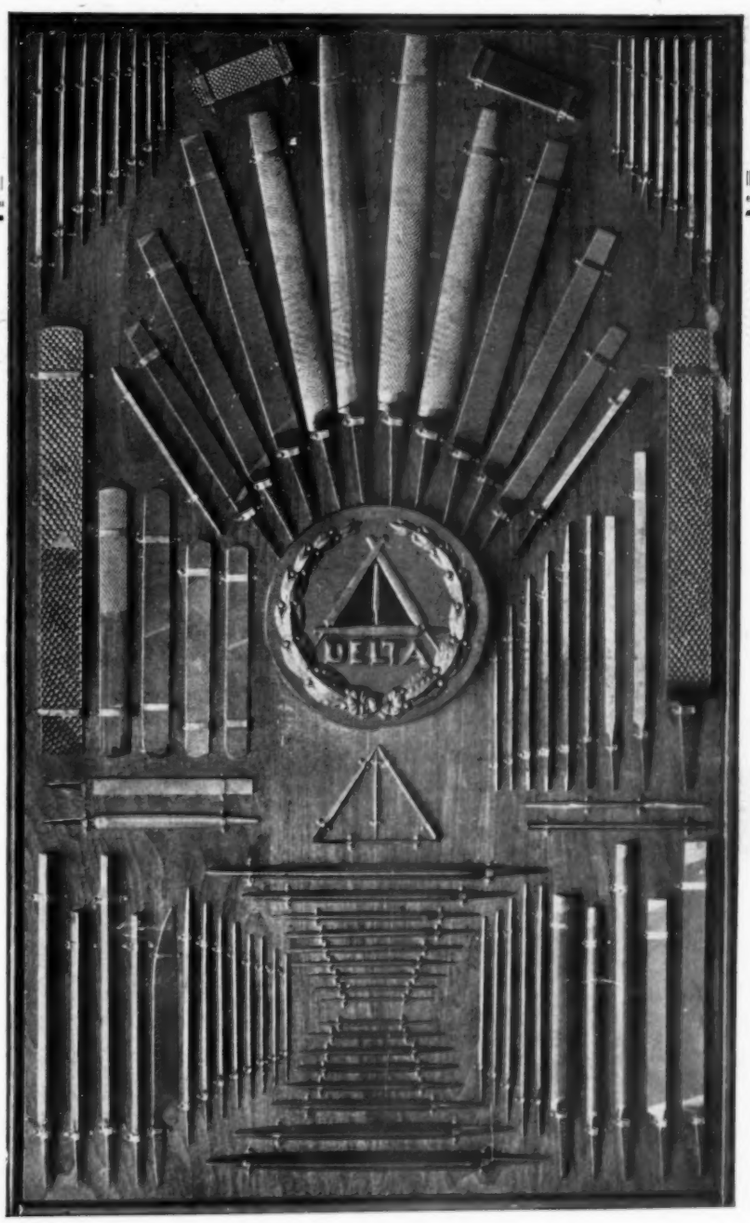
VOL. 75. No. 11. CHICAGO, MARCH 16, 1918. $2.00 Per Year.

FILES OF QUALITY

TRADE MARK DELTA

A Good File Display

With a large assortment of files of different sizes and "cuts" most anyone can make a good file ***display,*** but to make a ***good file*** display the files must be ***good.*** The cut herewith illustrates both a good file ***display*** and a ***good file*** display. Such a display of ***good*** **DELTA** files should not be lacking in your store. **DELTA** files are ***guaranteed*** to be ***good,*** and we measure the success of our files by the working of our guarantee. If a **DELTA** file fails we want to know it because we're selling ***cutting ability*** and ***satisfaction.***



Business Comes to Those Who Get It

Selling a customer a ***superior*** file is hard only when that customer uses a make that he says "is good enough for me." Force won't make him buy a **DELTA** ***"File of Quality."*** Just merely suggest **DELTA** files and tell of their quality, cutting efficiency, durability, deep-cut teeth, service and their ***written guarantee*** of absolute satisfaction. Let him know that **DELTA** files won't cost him anything unless they do all that ***he*** knows a ***good file*** should do.

You will find that **DELTA** files rarely come back—but their users do—to ***buy more.*** Get the profits to be had by selling **DELTA** files. ***Write for Complete Details Today.***

TRADE MARK DELTA

DELTA FILE WORKS

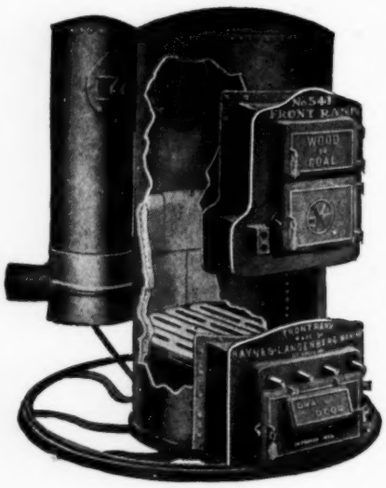
PHILADELPHIA, PENNSYLVANIA

FILES OF QUALITY

ALPHABETICAL INDEX AND CLASSIFIED LIST OF ADVERTISERS. 52 and 53.

The FRONT RANK
TRADE NAME REGISTERED

Steel Furnace



sells best, serves best and satisfies best, because it **Conserves Fuel** by reason of its

Longer Fire Travel

and larger radiating surface. The FRONT RANK gets the biggest percentage of heat value out of the fuel; uses any kind of fuel; is so simply and strongly built it stays in order; automatically ventilates while heating the rooms; automatically humidifies the warm air, and so pleases customers that every one of them becomes a walking advertisement for the FRONT RANK Steel Furnace.

If you are not handling the FRONT RANK write us today for liberal terms

Good bye! We're going home FRONT RANK is too hot for us.

TRADE MARK
REG. U. S. PAT. OFF.

Haynes-Langenberg Mfg. Co.

4058 Forest Park Boulevard St. Louis, Mo.

ESTABLISHED 1880
Representative of
The Stove Tin Hardware
Heating and Ventilating Interests
PUBLISHED EVERY SATURDAY

AMERICAN ARTISAN and Hardware Record

Address all communications and remittances to
DANIEL STERN
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VOL. 75. No. 11. CHICAGO, MARCH 16, 1918. $2.00 Per Year.

The Right Character of Service.

AN UNANSWERABLE argument in support of the positive advantages to be derived from trade organization is furnished by the example of the National Association of Sheet Metal Contractors. This body is working out a plan whereby all the sheet metal requirements of the Government, particularly of the cantonment section, will be distributed for estimates through the National office of the Association. In placing its contracts for war materials, the Government is endeavoring to work through already established National trade associations. The authorities at Washington recognize that information regarding the facilities of various shops for the kind of work desired can be obtained more rapidly and with a smaller element of inaccuracy than by any other means.

The secretary of the National Association of Sheet Metal Contractors, Edwin L. Seabrook, was in Washington, D. C., last week discussing the matter with the different officials who have charge of the letting of sheet metal contracts. Without exception, these officials express themselves as desirous of securing the co-operation of the National Association. Everything reasonable was done to assist Mr. Seabrook in his mission. A number of sheet metal articles required by the Government on building and in the camps were given the secretary, together with the name of the Government officer having charge of the letting of contracts on these articles.

In fulfillment of a purpose to make the National organization serve the interest of its membership, it is proposed to furnish the membership with information regarding the requirements of the Government. Considerable sheet metal work which can be done in individual shops is needed for the Navy. The National Association of Sheet Metal Contractors intends to secure a list of such work and distribute the specifications of the Government among its members for estimates. It is quite logical to assume that this work can be done at less cost in the vicinity where it is required than at a distance. The estimate is to be made directly to the Government, the contract let, and payments made by the Government. The general contractor does not figure in the transaction at all. By this method, the member is promptly advised of the Government work going on in his neighborhood and he can place his bid directly with the proper officer in Washington. Thus the member whose shop is located where the work is to be used is brought in touch with the Government without the mediation of a line of sub-contractors.

Iron In War and Peace.

INSTEAD OF being content with the doctrine that "sufficient unto the day is the evil thereof" many iron masters are asking what is going to happen after the war. That is in a measure a foolish question. It is something like crossing bridges before you come to them. Just now all of us have all we can do and more than we can do to keep up with the procession. To be perfectly truthful, there is such a scarcity of iron that consumers are in constant distress. But as for worrying over the future, what is the use? If history repeats itself there will be more demand for iron after the war than there is now. The history of all recent wars is that peace calls for more iron than war. There can be no question as to what will happen. War stimulates the national imagination. It stirs men from the bottom. It awakens the dormant vision of men and nations.

The difference between this war and all others is that it is a world war, and the world will be aroused as never before. When war ends and peace comes we shall witness the beginning of a tremendous and unprecedented industrial revival. All the people realize that the Path of Progress lies upon the Seas. From Norway to the Argentine there will be the building of ships, and every land will extend and improve its railroad systems. We keenly realize their present shortcomings. And what has happened to the railroads in America has happened across the ocean.

The world will proceed to reconstruct itself—and this means iron. The foundation stone of modern industry is iron, iron ships, iron railroads, iron cars, iron machinery, iron buildings—iron and still more iron. And as we survey the development of the future we see no reason to think that the iron master need feel that his product will go a-begging. On the contrary, we feel that for many years to come there will be difficulty in getting enough iron to meet the multitudinous needs of the greater and the expanded world that is to be. We are optimists, but our optimism has a solid basis in the history of modern economic development.

Service Is Necessary.

MUCH good advertising is partially wasted by failure to reinforce it with good service in the store and good quality in the things which are advertised. No amount of cleverness in advertising can bring continued success to the retailer who does not carry a good stock of what the people want, or what they will want when it is properly advertised. Advertising can only

bring buyers to the store and if a merchant's stock and prices are not attractive, the force of the advertising is lost. To have good service is just as important as to have good merchandise. A retailer may make up his copy in the most approved manner, or buy most judiciously and then fail to build up a successful business, solely because of poor store service.

Needless to say, advertising cannot accomplish the impossible any more than barren ground can yield rich crops. But how it does make things hum when the product and proposition are right; the men and the methods above criticism; where there is an honest purpose and an earnest effort from bundle boy to general manager to serve efficiently, to deal honestly, to sell good goods and to price them fairly. Oil up the machinery of your business, imbue your organization with the spirit of true service. Make your business worthy of the good will, the confidence and the patronage of the people. In this fertile field then, sow the seed of advertising and it will bring forth abundant fruits in a greater yield of profits and a reputation which is beyond reproach.

IT IS FOR YOU to provide standard measures of safety and health which will keep every person fit. It is for you to dilute your labor force and share your skilled workmen to bring up the efficiency of other plants. It is not enough if you are 90 per cent efficient, if your neighbor is but 50 per cent efficient. You help the Government if you find a way to make him 90 per cent efficient. This is War Americanization. This is the man-power engineering that will win the war. A Priority Board on Labor is essential in order that you may have a goal toward which to direct your efforts. It will be successful in the measure in which you co-operate and to the degree that patriotism takes precedence over profits. The task of organizing the labor market is the responsibility and the opportunity of the employers of this country.

Improving Man Power.

THE SELLING of hardware is a science. Knowledge of it does not come by inspiration. Any two-legged thing with hands and a fairly articulate voice can take a customer's money over the counter. But that is not salesmanship. Salesmanship means more than removing a commodity from the shelf and handing it to a patron in exchange for coin of the realm. It means adjusting the article to the buyer's needs. It signifies the cultivation of purchasing desire in harmony with the reasonable necessity, comfort, usefulness and resources of the customer. Consequently, it implies a familiarity with the virtues of the article which is sold. This involves acquaintance with the material from which the article is constructed and the purposes to which they may be applied.

Knowledge Is Needed In Selling.

The hardware salesman, therefore, who takes the trouble to learn something about metals employed in hardware manufacture is certain to enhance his own talents and to better his skill as a salesman. Even the clerk who is concerned solely in handling finished products may develop into a much more efficient salesman by acquiring a practical knowledge of their manufacture. Take for example zinc. The most important use to which metallic zinc is put is, of course, galvanizing, which consumes nearly 80 per cent of the total output.

A large variety of articles sold in the hardware store are galvanized. New methods of galvanizing are coming into wider use. Thus Sherardizing and electro-galvanizing are replacing older methods to a considerable extent. In the Sherardizing process the cleaned articles are heated to a temperature just below the melting point of zinc in a closed retort containing zinc dust. The volatilized zinc gradually combines with the iron, giving a coherent, protective coating. This process is particularly well adapted for coating articles which have a pattern or design on their surface and which would become filled up or obliterated if the ordinary galvanizing process were employed. The Sherardizing process has the advantage of being capable of taking a highly finished nickel-plate polish.

With regard to electro-galvanizing, which is sometimes employed for special purposes, it is to be noted that in this case the zinc is either in the form of a neutral solution of the sulphate or dissolved in excess of caustic soda, the former being the more generally favored. The advantages claimed for electro-galvanizing over the ordinary hot-bath process are that the operation can be carried out at ordinary temperatures, greater economy in fuel is effected, and the thickness of the coating can be accurately controlled. It has the disadvantage, however, of giving a dull surface.

The addition of small quantities of zinc to copper renders it "red short," that is, incapable of being worked when red hot, but has no appreciable effect on the malleability of the metal when cold. Alloys containing over 80 per cent of copper are red or reddish-yellow in color. Brass containing 60 per cent of copper can be rolled hot or cold, but it is less ductile than the alloys containing a larger percentage of copper, although its tensile strength is greater. The alloys containing over 50 per cent of copper are chiefly employed as "brazing" or "hard" solder. Muntz metal was originally introduced for sheathing wooden ships, but is now chiefly used, under the name of "yellow metal," for the cheaper varieties of brass tube, wire and sheet. When the quantity of copper is reduced to 50 per cent the resultant zinc alloy cannot be rolled either hot or cold, and as the amount of copper is further decreased the alloys become more fusible, brittle, and nearly white in color.

Aluminum-zinc alloys contain from 10 to 20 per cent of zinc and about 2 per cent of copper, and are largely used for light castings such as are employed in the automobile industry. It is observed that alloys of aluminum and zinc increase in tenacity and hardness as the zinc is increased up to 28 per cent, whilst the ductility at first falls but attains a maximum with 12 to 14 per cent and then falls rapidly as the zinc is increased. The tensile strength of annealed alloys carrying 12 to 14 per cent of zinc is about twice that of aluminum, but the elongation is about the same. The addition of a small quantity of zinc to certain alloys increases their wearing power, and for this reason it is used in bearing metals and bronze coins.

RANDOM NOTES AND SKETCHES.

BY SIDNEY ARNOLD

A good laugh is a safety-valve. When we become so intense that we cannot argue without getting mad, we ought to go aside and laugh at ourselves, and then come back and try it again. The comic is a part of human life. We have no right to censor it out of our daily existence simply because the nations happen to be at war. The very reason that the world is dark is an argument that somebody should laugh. The world would be unendurable if there were no one in it any longer capable of laughing. If we wish to live through this war we must use everything that is within us—and one of those things is our sense of humor.

* * *

It is hard work to convince some men of the need of organization, according to my friend, Harry C. Knisely, President Sheet Metal Contractors' Association of Chicago. He says they remind him of Jimmy.

The teacher was trying to break Jimmy of saying "I have went," but the task seemed hopeless. So as a last resort she had him stay after school and write twenty times on the blackboard "I have gone home." While the child was occupied the teacher left the room and was still absent when Jimmy finished the task. And to acquaint her with the fact he wrote:

"Dear Teacher: I have wrote what you told me and have went home.

* * *

Once in a blue moon some daring individual gets the better of a loquacious barber. The following instance is vouched for by my friend, Arthur Bliss of Bullard and Gormley Company, Chicago:

One day Mark Smith was being shaved by the very talkative barber at the Peninsula Club and was forced to listen to many of the barber's anecdotes.

Stopping to strop his razor, and prepared, brush in hand, to commence again, the barber said, "Shall I go over it again?"

"No, thanks," drawled Mark. "It's hardly necessary. I think I can remember every word."

* * *

When I went home to the partner of my joys last night, I found her smiling with a sort of reminiscent merriment.

"You've heard something funny today, Heart's Delight," I said to her. "Let's hear it."

Whereupon Mrs. Arnold related her experience with the colored laundress. She had asked her:

"Is your husband much of a provider, Malindy?"

In all seriousness Malindy replied:

"He jes' aint nothin' else, ma'am. He gwine to get some new furniture providin' he gits de money; he gwine to git de money providin' he go to work; he go to work providin' de job suits him. I never see such a providin' man in all mah days."

* * *

A good many of our woes are imaginary, says Henry Stuckart, the genial Chicago hardware man, as in Mrs. Brown's case:

Mrs Brown's poor husband had unfortunately been laid up for six months. But the glad news that he was on the high road to recovery had come at last.

"I'm so glad to hear that your husband is getting better," remarked a kindly lady to Mrs. Brown one day.

"Well, so am I, mum. He was getting along so nicely last week, but now the doctor says he's got the convalescence! Isn't it hard lines, mum?"

* * *

"Deacon" Salisbury of Iver Johnson Arms & Cycle Works, Fitchburg, Massachusetts, related to me a colloquy which he overheard the other day between two sons of the Green Isle:

Pat—"Patience and perseverance accomplish all things."

Murphy—"Rubbish, sir! Will patience and perseverance ever enable you to carry water in a sieve?"

Pat—"Certainly!"

Murphy—"I should like to know how."

Pat—"Simply by patiently waiting for water to freeze!"

* * *

A visit this week from John Frederick Balz of H. P. Chenoweth Company, Birmingham, Alabama, left a glow of pleasure in our sanctum and the memory of an engaging smile.

* * *

My friend Joe Chandler of the Republic Metalware Company of Chicago, says that distinctness of pronunciation is highly important in business dealings. Its absence is often responsible for costly misunderstanding. He gives a case to prove it:

An English foreman in one of the textile factories was in the habit of having an apprentice heat his luncheon for him. The other day he called a new apprentice. "Go down stairs and 'eat up my lunch for me," ordered the foreman. The boy—a typical young American with no knowledge of cockney English—obeyed with alacrity. He was hungry. Ten minutes later the foreman came down. He also was hungry. "Where's my lunch?" he demanded. The boy gazed at him in amazement. "You told me to eat it up and I ate it," he stated. "I didn't tell you to heat it up!" roared the irate foreman. "I told you to 'eat it up." 'Well, I didn't heat it up," maintained the youngster, stoutly. "I ate it cold."

* * *

I don't know who composed the appended verses—though they have a sound of Berton Braley in his slangy mood. Frankly, I like the lines because they hit the kind of a fellow who always blockades the happiness of other people.

The Whiners.

I don't mind the man with a red-blooded kick
  At a real or fanciful wrong;
I can stand for the chap with a grouch if he's quick
  To drop it when joy comes along.
I have praise for the fellow who says what he thinks,
  Though his thoughts may not fit in with mine,
But spare me from having to mix with the ginks
  Who go through this world with a whine.

I am willing to listen to sinner or saint
  Who is willing to fight for his rights,
And there's something sometimes in an honest complaint
  That the soul of me really delights.
For the kickers are useful and grouches are wise,
  For their purpose is frequently fine,
But spare me from having to mix with the guys
  Who go through the world with a whine.

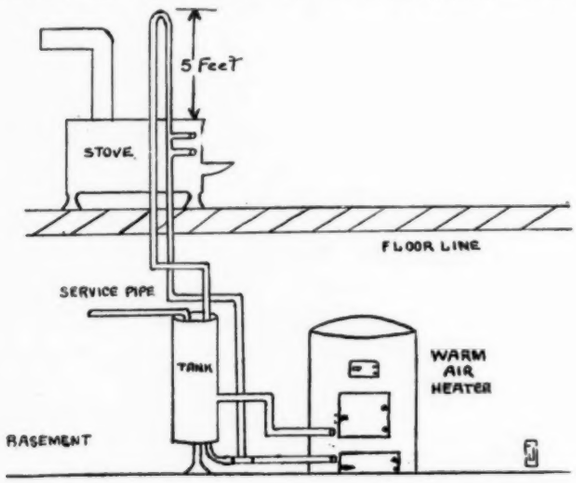
UP TO THE MINUTE NEWS SIFTINGS

The Orbon Stove Company, Belleville, Illinois, recently incorporated with a capital of $50,000, plans to build a foundry shortly. The incorporators are J. A. Langfelder, J. A. Mueller and others.

The Perryville Stove Company, Perryville, Indiana, is taking bids for a factory addition to include a foundry, machine shop and cleaning room. These departments will be one story, 50x100 feet, 50x100 feet and 30x50 feet, respectively. C. H. Cochrane is manager of the plant.

TELLS HOW TO CONNECT RANGE WITH TANK IN BASEMENT.

In these days of urgent economy any device which results in a saving of fuel naturally commends itself to the consideration of patriotic citizens. In many homes it is possible to heat water for kitchen purposes with less expenditure of coal than that which now obtains. Recently an inquiry was published in these columns asking for methods of putting this desirable saving into practical effect. What appears to be a



Plan for Connecting Kitchen Range With Tank in Basement.

workable plan in response to the query is that submitted by Charles Hahn, a Chicago sheet metal contractor. He writes as follows:

To American Artisan and Hardware Record:

Some time ago it occurred to me that a more economical arrangement could be made for heating water in a kitchen range. It often happens that hot water is desired during certain periods of the day when the stove is not in use for purposes of cooking, particularly during the winter. It seems an unjustifiable waste of fuel to start a big fire in the kitchen range for the purpose of heating the water and then to have the fire continue to burn long after the water has been heated. I was glad to notice the inquiry on page 18 of March 2, 1918, issue of American Artisan and Hardware Record asking if the hot water front of a kitchen range on the first floor of a house would work successfully with the tank in the basement. I enclose a plan showing that it will operate satisfactorily. The diagram is self-explanatory. It will be perceived from the drawing that the return pipe is dropped under the tank in the regular way. The flow pipe, however, is run about five feet above the stove. This system has given satisfaction in my own case and I am quite sure that it will meet the requirements of your subscriber.

Charles Hahn,
Sheet Metal Works.

Chicago, Illinois, March 9, 1918.

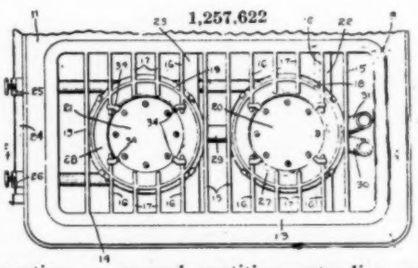
TELLS WHAT WAR SAVING AND THRIFT STAMPS WILL BUY FOR SOLDIERS.

The value of war saving and thrift stamps can be better appreciated by an understanding of what they will do for our soldiers. A single thrift stamp will buy a tent pole or five tent pins, a waist belt or hat cord, shoe laces or identification tags. Two thrift stamps will buy one trench tool or a pair of woolen gloves. Four thrift stamps will buy two pairs of canvas leggings. Six will buy five pairs of woolen socks or three suits of summer underwear. Twelve will buy a steel helmet.

Regarding war saving stamps, one will buy one hundred cartridges or a cartridge belt or a scabbard for a bayonet. Two will purchase two pairs of woolen breeches or two flannel shirts. Two and one-half will buy a gas mask. Three war saving stamps will buy an overcoat or two woolen service coats. Three and one-half will buy three pairs of blankets. Four will buy a rifle.

OBTAINS PATENT RIGHTS FOR WATER HEATING DEVICE.

Carlos A. McNeir, Minneapolis, Minnesota, has procured United States patent rights, under number 1,257,622, for a water heating device described herewith:



A water-heating device comprising a water-circulating member having a pair of hollow ring portions, a neck connecting said ring portions, a partition in said neck extending across both of said ring portions, a second partition extending across one of said ring portions opposite to the neck, and inlet and outlet pipes formed on said last-named ring member on opposite sides of said last-named partition, making a single circuitous passageway through the member, and means for attaching the same to the grate of a gas stove.

NEW STOVE COMPANY INCORPORATES.

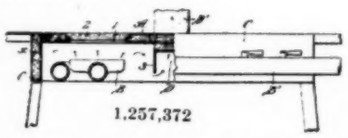
Modern housing conditions in the large cities tend to increase the demand for gas ranges. Families living in apartments, where coal-burning stoves are the exception rather than the rule, require efficient gas ranges and often refuse to rent a flat whose kitchen is not equipped with gas ranges of modern construction and conveniences. These facts explain the growth of the business, calling for new producing plants. It is in response to such requirements that the Banner Gas Range Works has just been incorporated for $100,000 at South Bend, Indiana. The directors of the new corporation are Harry A. Engman, Lewis C. Matthews, John C. Van Ryper, Jr., and William H. Holland.

CO-OPERATION GETS RESULTS.

Truly, the idea of community co-operation and community development is in the air. And, being in the air, it may be held as a criterion of better things in store in the future for those of our smaller towns that grasp the real thought of their obligations to the community of which they are the center.

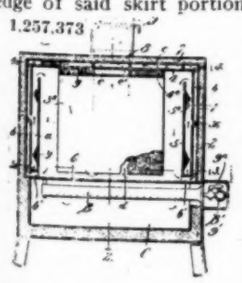
ACQUIRES PATENTS FOR GAS RANGES.

Franklin P. McCarty, St. Louis, Missouri, has been granted United States patent rights, under numbers 1,257,372 and 1,257,373, for two styles of gas ranges described herewith:


1,257,372

A gas range having a closed top forming a permanent part of the stove and provided with a combustion chamber that is surrounded by a depending skirt portion on said top, said top and skirt portion being insulated and the top being provided with openings for receiving cooking utensils or other objects, burners inclosed by said top, and a discharge flue under said top which communicates with an uptake pipe, said flue being formed by a top wall that is inclined upwardly toward said uptake pipe and side walls that project down into the combustion chamber and whose lower edges terminate in a higher horizontal plane than the lower edge of said skirt portion so that the heat which is generated in the combustion chamber under the top will escape into the open lower side of said flue instead of passing downwardly and laterally under the lower edge of said skirt portion.

1,257,373

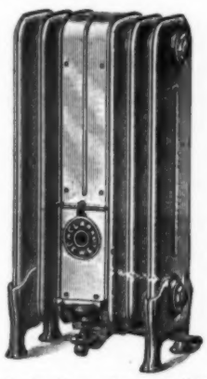


A gas range provided with a baking oven and a burner space whose outer walls are heat insulated, hollow portions on the rear wall and side walls of the oven that contain heat absorbing material and vertical flues, vertically disposed plates that co-operate with the side walls of the oven to form uptake flues which conduct the products of combustion from the burner space into the upper portion of the oven, the vertical flues at the sides and rear wall of the over having their lower ends communicating with the interior of the oven, a hollow portion on the top wall of the oven that contains heat absorbing material and a horizontal flue, and a flue space in the top wall of the oven that communicates with the front end of said horizontal flue and with the upper ends of the vertical flues at the sides of the oven.

"When you attempt to throw dirt in the other fellow's eyes, be sure that the wind is in the right direction, lest it blow back and blind you instead."

RADIATOR HEATS AND VENTILATES.

An unusual and distinctive feature is to be found in the Peerless Gas Radiator, manufactured by George M. Clark and Company, Division American Stove Company, Chicago, Illinois, Branch Offices, 209 West Forty-third Street, New York City, and 86 Third Street, San Francisco, California. This gas radiator heats and ventilates at the same time. If connected to a flue, ventilation takes place all the time that it is running. It ventilates by taking the foul air from the floor and passing it up the flue, and fresh air comes into the room through cracks of doors and windows.


6 Section Gas Raditor, made by George M. Clark and Company, Chicago, Illinois.

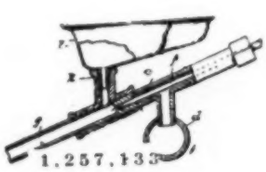
These radiators are made of steel and, therefore, act quickly, because there is less metal to heat. The steel used is Rust Resisting Armco Iron of 20 gauge. It is claimed by the company that there is in this radiator no backing up of the products of combustion when starting. At the start, products of combustion go up out the flue direct, but as soon as the radiator is filled with hot air, the direction of flow automatically changes and passes all through the radiator. Where it is not convenient to connect to a flue, the manufacturers say that they can furnish for a very trivial amount, a flue deflector box which throws the heat forward away from the wall. The radiator shown in the illustration is a six section one, and has 14 feet radiation. The finish is said to be a handsome aluminum bronze, oven backed, that stands heat wonderfully. Dealers and installers are invited to look into the merits of this radiator. The company will provide all particulars upon request.

ECONOMIC SECURITY IS FIRST NEED.

Individuality can flourish only in a free common life; the economic base of life must be secured. A flower can never blossom till its roots are secure. Humanity is a flower, the individual the blossom; this blossom cannot be till the bread-and-butter question is settled.—Wentworth.

MICHIGAN MAN INVENTS A BURNER.

Under number 1,257,133, United States patent rights have been granted to Alvin G. Sherman, Detroit, Michigan, assignor to the Detroit Vapor Stove Company, Detroit, Michigan, for a burner described in the following:


1,257,133

The combination of a burner, a valve housing having a valve seat and screw-threaded on one end, a valve located therein and seating on the valve seat of the housing, a pipe screw-threaded on one end, the ends of the pipe and valve housing screw-threaded being adjacent to each other, a T-union into which the two threaded ends of the pipe and valve housing engage, and a priming basin having a depending teat which can be dropped into the opening of the upright of the T-union.

THE WEEK'S HARDWARE RECORD

Of Interest to Manufacturer, Jobber and Retailer

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing western hardware and metal prices corrected weekly. You will find these on pages 46 to 51 inclusive.

The Norvall-Wilder Hardware Company at Beaumont, Texas, has increased its capital stock from $150,000 to $325,000.

The DuPont Powder Company, Wilmington, Delaware, is in the market for six or eight locomotive cranes to be used in the construction of a powder plant for the Government.

The General Tool and Manufacturing Company, Milwaukee, Wisconsin, has been incorporated with a capital stock of $15,000 by George H. Ahlswede, E. J. Stanek and Fred Zinzow.

According to amended articles of incorporation, the hardware firm of Farwell Ozmun, Kirk and Company, St. Paul, Minnesota, has increased its capital stock from $1,500,000 to $3,000,000.

SELECTS AN INVESTIGATOR TO STUDY HARDWARE MARKETS IN NEAR EAST.

The reports of the Bureau of Foreign and Domestic Commerce on the hardware markets of various countries, prepared by the commercial attachés met with such a hearty response that the Bureau decided to continue this work. It appointed a field investigator to make a first-hand study of the markets in South Africa, India, and the Near East. These markets are comparatively unknown at the present time. Charles S. Williams, for years a hardware salesman, was chosen to make this investigation. He reported for duty in March, last year, and was greatly assisted in the preparation of his work through the co-operation of the American Hardware Manufacturers' Association. The hardware trade comprises so many different lines that it was necessary to limit clearly the scope of the investigation. As tentatively planned, the investigation now covers in a general way builders' hardware, plumbers' hardware, scales, shelf hardware, saws, files, wrenches, chains, nuts and bolts, and screws. On his preliminary trip Mr. Williams visited the hardware centers of the United States, and had the advantage of the discussion at an annual meeting of the American Hardware Manufacturers' Association, held in Houston, Texas.

DU PONT COMPANY ACQUIRES STOCK IN MOTOR COMPANIES.

E. I. du Pont de Nemours and Company, of Wilmington, Delaware, announce their acquisition of substantial stock holdings in General Motors Corporation and Chevrolet Motor Company in which they, together with William C. Durant, now own the controlling interests. The purchases were covered almost entirely by private contracts. It is part of the policy of the company to acquire industrial interests which will replace their military business after the war. Mr. Durant will continue as president of the Motors Company in which he is still the largest stockholder.

AVIATION SECTION ISSUES CALL FOR TEN THOUSAND SKILLED WORKMEN.

Ten thousand mechanics, machinists and other skilled workers are needed by the Aviation Section, Signal Corps at once. The call for men is to fill an immediate need and may be regarded as the precursor of others as the service is being built up. Even at that the actual strength of the service today is over one hundred times what it was on April 1, 1917, according to Government authorities. The need for skilled men is more and more felt as time passes. Since the first rush it has developed that practically 98 out of every 100 men in the service must be skilled in some branch of work.

Work on the airplanes has proven wholly new and unfamiliar to American mechanics, who have been taken from other trades and converted hastily into workers on the most delicate kind of jobs. It has been necessary for both officers and men to learn very largely by experience. At the same time a degree of care and attention not usually associated with American quantity, production, and methods has been required, as great watchfulness is essential to prevent any plane from leaving the ground in imperfect condition.

Men registered in the draft may be inducted into this service by applying to their local draft board. Men not registered may enlist at any recruiting office. Further information may be had by applying to the Air Division, Personnel Department, Washington, D. C. In either case the men will be sent to San Antonio, Texas, for segregation by trades, followed by a brief course of instruction at the flying fields or at various factories, and organized into squadrons mostly for service over-seas. The present call is especially for machinists, auto mechanics, engine repair men, chauffeurs, carpenters, tinsmiths, coppersmiths, and sheet metal workers.

NAVY MAN RENEWS SUBSCRIPTION.

To American Artisan and Hardware Record:

Enclosed find money order to renew my subscription to October 1, 1919. You will be glad to know that American Artisan and Hardware Record never fails to reach me. I get so much benefit from it that I could not do without it.

O. W. Barth, U. S. Navy.

Somewhere in Scotland, February 22, 1918.

EXHIBITS IN AMERICAN ARTISAN WINDOW DISPLAY CONTEST

WINDOW DISPLAY GIVES LESSON IN WAR TIME CONSERVATION.

Our Government is asking everybody to co-operate with it in the matter of food conservation. We cannot win the war without the support of all our people in the solving of this great problem. What can be more appropriate, therefore, what can be more timely, than a window exhibit such as the one shown herewith which immediately attracts the attention of passers-by and causes them to reflect seriously on the question of table economy? It is a strong reminder of one's duty to one's country, and deserves the thanks of all patriots. The display was not without its reward, for it served as a great business-getter for the store owner. Table cutlery, carving sets, percolators, thermos bottles, etc., were sold in great quantities during the time that the exhibit lasted. The display was arranged by Robin A. Frayser for Howell Brothers, Richmond, Virginia, and was awarded Honorable Mention in

Window Display Awarded Honorable Mention in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition. Arranged by Robin A. Frayser for Howell Brothers, Richmond, Virginia.

AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition. Mr. Frayser described the exhibit thus:

"The background of this display was of a rich tan wall paper, with a border blending to cover the seams.

"At the top of the background was crepe paper on which were painted soldiers, sailors, flags, and eagles, as can be seen from the picture. In the center, suspended from the ceiling or top of the window was a Service Flag, showing that two of the company's boys

are in the United States Service.

"In front of the flag was a tall wood pillar covered with imitation wood paper, this color also being a rich tan and brown. In front of this was a wood frame of black with a bronze lion's head at each upper end.

"In this frame was a beaver board colored a pea green on which were painted a scuttle of coal, some meat, a bag of flour, a can of fat, a bottle of milk, and a box of sugar. There were also two signs in the frame one of which read:

'Conservative Saving of these Goods Will Help Win the War.'

The other read:

'Waste in the kitchen Causes Hunger.'

"The aforementioned goods were painted in actual colors. At each end of the frame was a service man standing in a position as if on guard over these goods. The frame was set on a shelf. On the center of this shelf was a small wooden submarine with two destroyers. On each end of the shelf was a lithographed cut out of a ham, and another of a loaf of bread. The knives that can be seen from the picture are real knives cut into the card board.

In front of this shelf and somewhat lower was another shelf on which were representations of soldiers and sailors standing on guard as if to protect the goods. There was a lithographed cut-out at each end. In front of the soldiers and sailors were slicers, and in the center was a stand holding table knives.

"The background was covered with posters and cut-outs pertaining to the conservation of food and to the purchase of Liberty Bonds. In front of these on the floor were displayed table cutlery, carving sets, percolators, thermos bottles, etc.

"This display attracted considerable attention and was an excellent trade-bringer."

PRAISES SERVICE TO SUBSCRIBERS.

To American Artisan and Hardware Record:

It affords me pleasure to testify that real service to its subscribers and valuable publicity to its advertisers are characteristic features of American Artisan and Hardware Record. I want to congratulate you on the steadily growing improvement during the last three years in which I have been a constant reader and student of your publication.

Yours very truly,

A. T. Van Dervoort,

Van Dervoort Hardware Company.

Lansing, Michigan, March 11, 1918.

TOY CANNON TEACHES CHILDREN THE VALUE OF PREPAREDNESS.

The character of our citizenship in the next generation depends on the way our children are being brought up. If love of country and true patriotism are being instilled in the minds of the children then our future citizens will be loyal Americans. By this it is not implied that children should be taught that militarism and aggressive warfare are right. They should learn to hate these relics of barbarism and their disciples. They should know the value of preparedness against the foes of liberty and democracy. We get a good idea regarding the proper kind of knowledge of nationalism from the words of the child who said, "Our country doesn't start any fights, but if anybody else starts they always get licked."

He was proud of his country, proud not because it was able to start a fight, but because it could defend itself. Imagine, then, how big he would feel if he had a "regular" cannon to destroy submarines and bring down the enemy aeroplanes. Such a toy, for example, as the Koast Defender Target Cannon, illustrated herewith, and manufactured by Schroeter Brothers Hardware Company, 717-719 Washington Avenue, Saint Louis, Missouri, would give his childish patriotic heart a thrill of genuine pleasure. This toy is claimed by the manufacturers to be absolutely harmless. It can be used for target practice. It imitates a cannon for shooting down aeroplanes, and also for demolishing submarines. It can be adjusted instantly to any angle, and is said to have a great many features found in a real cannon, even to the recoil. The company declares that hardware dealers will find this to be a fast selling article. Dealers may obtain descriptive literature and full information regarding this new device by writing to the manufacturers.

AEROPLANE ANGLE
CANNON REVOLVES HERE
SUBMARINE ANGLE
WOOD PROJECTILES HARMLESS FOR TARGET PRACTICE
SPECIAL SHELLS AUTOMATIC HARMLESS FOR MAKING REPORTS
PAT. OCT. 30 1917

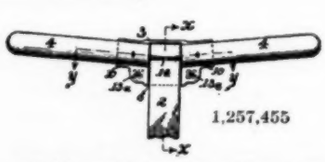
Koast Defender Toy Cannon, Made by Schroeter Brothers Hardware Company, St. Louis, Missouri.

MANILA ROPE AGREEMENT IS RATIFIED BY FEDERAL COMMISSION.

The Federal Trade Commission has ratified the agreement among the manufacturers of rope, arranged by Commissioner Murdock, providing that after April 1st rope manufacturers will not use the term "manila" on rope containing less than 100 per cent manila, unless there is shown clearly and conspicuously the exact percentage of manila hemp contained in the rope.

ASSIGNS PATENT RIGHTS OF HANDLE FOR LAWN MOWERS.

William P. M. Braun, Philadelphia, assignor to the Pennsylvania Mower Works, Philadelphia, has obtained United States patent rights, under number 1,257,455, for a handle for lawn mowers described in the following:



In a handle structure, the combination of the main bar having its end portion made rectangular, with two laterally extending handle portions arranged at an incline to the bar and at a slight angle to each other, two clamping metal socket portions each having a rectangular socket for the end of the bar and laterally arranged sockets for the handle portions at a slight angle to each other and at an angle to the rectangular socket, said metallic socket portions arranged in clamping relation upon opposite sides of the bar and handle portions to hold them in fixed angular relation, and clamping bolts extending through the socket portions for clamping them in position upon the said bar and handle portions.

TRAINING OF SALESPEOPLE IS VITAL PROBLEM OF RETAIL BUSINESS.

The paper which W. F. Mueller read on the "Training of Salesmen" at the convention of the National Retail Hardware Association in St. Louis, presents several interesting angles of the subject and offers valuable suggestions on the vital topic of salesmanship. Mr. Mueller is secretary and manager of the Thiede-Mueller Hardware Company of Fort Dodge, Iowa, and his observations in the subjoining paragraphs are based, not on theory, but on years of experience:

TRAINING OF SALESMEN.

Training salespeople is a very serious matter, and with a possible exception of credits, the most important problem of our business, and to which most of us have paid little attention in the past. Without a good sales force our business is like a ship at sea without a rudder.

The sales force of a store consists of merchandise as well as sales people. A properly and neatly displayed stock is as much of a sales asset as our clerks.

Department stores and five-and-ten-cent stores lavishly utilize thousands upon thousands of feet of high priced floor space to display every article they have in the house—simply because every article neatly and tastefully displayed is a silent salesman. It is impossible to get salespeople to show goods that are out of sight.

We are apt to say it is all right for the other fellow to do these things for he has the help, the time, the room, the fixtures, etc., and we have not. This is just the reason the drug stores, the five-and-ten-cent stores, the department stores and a good many others are getting a good portion of the most profitable business that rightfully belongs to the hardware store. Here is where the training of our sales force comes in. Most of us no doubt have not the time to take care of all these details, but we can teach our clerks to do these things just as well as the other fellow, and, if we only think so, go them one better. All we need is a little "ginger."

Salespeople Must Be Educated.

Good salesmen and saleswomen are made, not born. Educate your own salespeople; don't try to hire them away from a competitor. Weekly store meetings are perhaps the best source of education. We have held them for a number of years. Attendance is not compulsory, but there is not a person in our employ who will not miss other things rather than one of these meetings. Everyone, from the delivery man up, attends. These meetings are conducted along the line of a school in salesmanship with a general suggestion and question box. New and seasonable goods are thoroughly gone over, so that all are familiar with the selling points. It is surprising how many suggestions are brought out along all lines dealing with the different departments of our business. At these meetings we are undisturbed, and every question and suggestion can be thrashed out for the benefit of all. Matters for correction or improvement are brought up and gone over without that touch of criticism which is pretty sure to follow when an employe is called up alone. Try these meetings for six months or a year; you will not do without them again.

It will improve your old men, and more quickly develop your green timber into seasoned salespeople, and last but not least, the "boss" will often learn a lot. You will get suggestions for the improvement of different departments, for stocking or dropping different lines, display arrangements, selling talks, etc., where you least expect them. It will pay a merchant with only two employes to hold these meetings. The increased business in dollars and cents may not be as large as that of the man that employs more people, but the percentage will be just as satisfactory.

Essentials of Good Salesmanship.

Thorough knowledge of merchandise is essential to good salesmanship. We should add to this, responsibility and confidence in our men. Too many of us are running, or trying to run, a one man establishment. We are trying to do all the little details, in place of devoting our time to the more important features of our business. Say to an employe: "John, I am going to turn this or that portion of the business over to you, use your own judgment and see what you can do with it." If he is the right kind, he will certainly do his very best, and if not the right kind, the quicker he is gotten rid of, the better.

Most of us lack a proper knowledge of our own business. If at the end of a month we do not know how much the different departments have done, or what each clerk's sales are, how are we to encourage or criticise? We should be in a position to give our clerks weekly or monthly statements of their department and personal sales. It makes all the difference imaginable if your force knows that you know what you are talking about, and not merely guessing. Among merchants who employ this method, it is the universal verdict that salesmen are always anxious for their reports, to know their standing.

It should not be necessary for our clerks to ask us for an increase in pay. We should at all times know, not guess, what each employe is worth. If they are worth more give it to them voluntarily, without their asking. A five dollar voluntary increase is appreciated more than one for twice that amount that is kicked for.

Profit Sharing Brings Loyal Co-operation.

Profit sharing with employes is acknowledged by the leading authorities as one of the best ways to get the fullest and most loyal co-operation. We can all adopt this system in some form or other. It may be done by giving them an interest in the business, or a certain per cent of the gross or net profits at the end of the year, or a salary and commission arrangement.

I am personally familiar with one store that works it in this way: When engaging a new man, or advancing one to the sales floor, they say to him: "We do not set your salary; you do that yourself. Your salary depends upon your ability. We want to pay you all we can. We would rather pay $100 a month than $50. Of course, you realize the more goods you can sell, the more money you are worth. We allow a certain percentage for sales expense. If you can sell a given amount of goods, you are worth so much money to us. Now go to it and see what you can do. We will pay you a commission at the end of the year on all sales in excess of the stipulated amount. Your next year's

salary will be based on this year's record, with the same commission arrangement."

The salesmen in this store are always anxious to see their money sales and department reports. In busy seasons they quite frequently go down after working hours to put their stock in shape, so as to be able to have more time on the floor next day. They are working for themselves as well as for the house. The commission being paid at the end of the year has a tendency, many times, to hold salesmen where otherwise they might leave.

Ability Must Be Recognized.

In filling responsible positions, we are too much inclined to consider the oldest employes. This should not be. Ability must be recognized. If the old employe does not show it, he should be side-tracked for the man who does. If your men know that advancement depends on their ability, rather than the length of time they have been with you, they will have a greater incentive for working hard and conscientiously.

The Personal Touch.

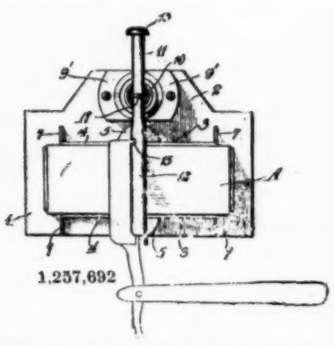
One big trouble with most of us is that we do not interest ourselves as we should in the personal affairs of our employes. They should be our friends, not merely hired help. Occasionally ask the whole bunch to your house for dinner; give them a pleasant afternoon or evening; take them out for a picnic on Decoration day or Fourth of July; give them an occasional afternoon off for a ball game.

When vacation time comes, pay their salaries in advance. Hand them a cigar, or even ask them for one —learn the inclinations of your men. When John returns from a fishing trip, ask how many fish he caught; or if he is a hunter, what luck he had shooting; if a ball player, how many balls he batted over the fence. All these things may seem trifling and insignificant, but if practiced they will pay big returns.

When we get back home let us put our time against that of our employes and start in to educate them; show them that we have their interest at heart; win their confidence; create in them love and enthusiasm for their work. When we do this we prepare these men and women to take the places that we will soon leave vacant.

SECURES PATENT RIGHTS FOR RAZOR HONING IMPLEMENT.

Under number 1,257,692, United States patent rights have been granted to Alfred Frenette, Thetford Mines, Quebec, Canada, for a razor honing implement described herewith:



1,257,692

In a razor honing implement, the combination of a base having a hone mounted thereon, a rotatable cylinder also mounted in the base at one side of and intermediate the ends of the said hone, the said cylinder having vertically extending slots, a blade holding clip provided with a shank adapted to extend through the said slots, a resilient means arranged in the cylinder and fixed thereto and connected with the said shank for exerting a pressure downwardly of the clip against the said hone.

GOOD FILES HELP DEALERS SUCCEED.

A beginner in the retail hardware business once asked an experienced and successful merchant, "How can I make good in the hardware field?" To this query the old hand made reply, "If you want to make good, give your trade articles which can make good." What sounder business philosophy than that could be advanced? It is difficult to conceive of any. A merchant may be possessed with the greatest amount of personal magnetism, he may have the natural ability to make friends, he may be very popular on account of his congenial nature, but, "Business is Business," and his many fine qualities will amount to naught if he cannot produce the goods. Of course, it is admitted that the features mentioned will help a dealer considerably, provided that he combines them with articles which are just as pleasing to his trade.

Delta Cabinet File.

When a dealer tries to sell a file, for example, he may be able with the aid of his amiability and charming disposition to induce the customer to accept a mediocre one, but it is a certainty that the same person will not come back to that particular dealer when he is again in need of a file, or any other article, for that matter. On the other hand, if the dealer sells his customer a file, and it makes good, the customer will not only come back himself for other articles, but will bring his friends with him. In this way a successful business is developed by the dealer. He has made good because his files have made good.

When it comes to choosing the files which afford satisfaction, which have the power to make good, a standardized brand should be selected, such as, for example, the Delta Files, one make of which is herewith illustrated. These files are made by the Detal File Works, Philadelphia, Pennsylvania. It is claimed by the manufacturers that they will make good under all conditions, and that they will satisfy the customers in every particular. It is further stated that these files have the deepest teeth of all files manufactured, and that they hold the record of being "Files of Quality." The manufacturers advise the dealer to write to them for their latest catalog and special trade prices, which they will send without charge or obligation.

DOORWAY IS IMPORTANT DETAIL IN GARAGE CONSTRUCTION.

Every time that something new comes into existence, it naturally follows that new problems arise which must be solved. For example, the private garage is one of the comparatively new buildings which present new difficulties. Its style must be in keeping with the automobile to be housed, and its architecture should harmonize with the residence to which it belongs. Plenty of room for the car, and a liberal allowance of space to work around it must all be provided without making the building unduly large

or occupying more than the frequently limited amount of space. The doors must occupy the greater part of one side of the building, and a place must be found for them when the doorway is to be opened. Without doubt the doors should be inside of the building, but very little space inside the garage can be appropriated for use in the movement of the doors. Thus it is seen that the doorway is an important detail in garage construction.

Number 235 Richards-Wilcox Trolley Right Angle Door Hangers.

However, it is claimed that all the difficulties in connection with this part of private garage buildings are overcome by the Slidetite Garage Door Hardware, manufactured by the Richards-Wilcox Manufacturing Company, Aurora, Illinois. The accompanying illustration shows the number 235 R. W. Trolley Right Angle Door Hangers, designed to use where, for lack of room, right angle doors are desired. It is said that the Slidetite Hardware combines the best features of sliding and swinging door construction. The doors slide and fold back inside the building, out of the way, permitting unobstructed use of the entire opening. For full information about the Slidetite Hardware, it is advised that those interested send to the company for the booklet, "Distinctive Garage Door Equipment." This will be sent free of charge. The company may be addressed either at Aurora, Illinois, or at any one of the branch offices in the following cities: San Francisco, California; Los Angeles, California; New York City; Chicago, Illinois; Philadelphia, Pennsylvania; Minneapolis, Minnesota; Boston, Massachusetts; and Saint Louis, Missouri.

CALM JUDGMENT IS ESSENTIAL.

In the present troublous times the retailer should keep his head, attend to the affairs of his business, and realize that his customers will have farm products to sell, money with which to buy merchandise, and that, while prices in some lines may tend to show further elevations, in the main merchandising will continue along the same lines it has followed in the past.

COMING CONVENTIONS.

Illinois Sheet Metal Contractors' Association, Springfield, April 3, 4, 1918. D. M. Haines, Secretary, Chicago.

National Association of Stove Manufacturers, New York City, May 8, 1918. R. S. Wood, Secretary, National State Bank Building, Troy, New York.

Southern Hardware Jobbers' Association, Traymore Hotel, Atlantic City, New Jersey, May 28, 29, 30, 1918. John Donnan, Secretary, Richmond, Virginia.

Old Guard Southern Hardware Salesmen, Traymore Hotel Atlantic City, New Jersey, May 29, 1918. George H. Hillman, Secretary, 1402 McGavock Street, Nashville, Tennessee.

American Hardware Manufacturers' Association, Traymore Hotel, Atlantic City, New Jersey, May 28, 29, 30, 1918. F. D. Mitchell, Secretary, 4106 Woolworth Building, New York City.

National Association of Sheet Metal Contractors, Milwaukee, Wisconsin, June 11, 12, 13 and 14, 1918. Edwin L. Seabrook, Secretary, Philadelphia, Pennsylvania.

National Warm Air Heating and Ventilating Association. Milwaukee, Wisconsin, June 12, 1918. A. W. Williams, Secretary, Columbus, Ohio.

RETAIL HARDWARE DOINGS.

Iowa.

Kamerick Brothers have purchased the hardware and implement business of J. G. Githens at Fremont.

Jahnke Brothers have sold their hardware store at Tripoli to H. G. Nichols.

Kansas.

F. P. Holdsby has purchased a hardware store at Clayton.

The Owl Hardware Company, formerly of Holton, has purchased the G. A. Perkins and Company hardware store at Bonner Springs and taken possession.

The Harris-Anderson Lumber Company of Leroy have bought Ralph Rankin's stock of builders' hardware.

I. W. Peter is the new owner of the hardware business at Republic City, formerly owned by W. L. Davis.

The United Stores Company at Greensburg has sold its hardware department to J. M. Caplinger.

D. A. Kemel and C. N. Jones have purchased a $15,000 stock of hardware in Dorrance.

E. E. McClure has traded his hardware and implement business at Republic City to Ed Powers.

Thomas B. Ellsberry has bought a half interest in the hardware store on Main street, Eldorado, from J. B. Yingling, who with his brother Ernest has purchased Mr. Ellsberry's interest in the Ellsberry and Yingling Brothers Auto Supply Company.

George Cope has purchased the Krider Brothers hardware store at Waldron and is now in charge.

The hardware and furniture firm of Sieben and Davis, Winchester, has been dissolved, J. M. Davis purchasing P. E. Sieben's interest and now being sole owner.

Minnesota.

Anton Dahle will engage in the hardware and implement business in Annandale.

Carl Anderson has bought the Benson hardware store at Florence.

Frank J. Heimann will open a hardware business in St. Cloud.

The D. W. Rowe hardware store at Glenwood has been purchased by M. M. Blunt.

Missouri.

The Sikeston Hardware Company, Sikeston, has increased its capital stock from $6000 to $20,000.

J. H. Magruder has sold his stock of hardware at Paris to Pelsue and Herring.

McColloh Brothers have sold their hardware stock at Holden to G. W. Medland of Urich.

J. G. Skidmore has purchased P. E. Skidmore's interest in the Farmers' Hardware Company at Guilford.

T. H. Bedford has bought the J. W. Booher hardware stock at Humansville.

M. Lamar and son Horace of Purdy have purchased a hardware store in Sarcoxie.

Nebraska.

Paul Vrzal has bought the McKnight Hardware Company's stock at Madison.

George Baker has sold his hardware store at Tekamah to Rice and Alderman.

North Dakota.

Frank R. Dusek will open a hardware store in Breman.

Jess Jones has sold his hardware store to B. A. Vasseau of Forest River.

Oklahoma.

G. C. Herman has sold his stock of hardware at Drumright to the Newton Hardware Company of Shamrock.

R. A. Edwards has purchased the hardware store at Duncan from B. F. Melton.

W. T. Berentz has sold his interest in the hardware store at Bartlesville to Ray Mayers and Charles Waltershea of Delaware.

J. W. Scanlon has disposed of his hardware business at Marietta to the Hardy-McKinney Hardware Company.

Luther Smith has sold his hardware store in Chillicothe, Texas, to the Wey Hardware Company of Eldorado.

W. J. Marsh has purchased the interest of J. A. Reynolds in the Hayworth Hardware and Furniture Store at Hayworth.

The Edwards Hardware Company, Duncan, has been incorporated with a capital stock of $15,000 by R. A. Edwards, H. T. Blake and J. W. Whisenant.

South Dakota.

Ben Knock, Jr., has sold his hardware store at Davis to U. R. Inwerks.

Jacob J. Weixel has purchased the interest of John N. Brundage in the hardware business of Brundage, Hieb and Opp at Eureka.

Texas.

The Jones Hardware and Furniture Company has been incorporated with a capital stock of $20,000 at Celina, by G. A. Jones, F. L. Jones and R. W. Jones.

Wisconsin.

Clarence Rutherford has purchased an interest in the Lake Mills hardware store at Lake Mills.

Herman Kamke has sold his hardware store at Peshtigo to Irving J. Wazek.

AUTOMOBILE ACCESSORIES SOLD BY HARDWARE DEALERS

The Meyers Auto Accessory Company, 35 Twentieth Street, Detroit, Michigan, proposes to build a two story factory, 40 by 120 feet.

OFFERS GOOD PROFITS TO DEALERS.

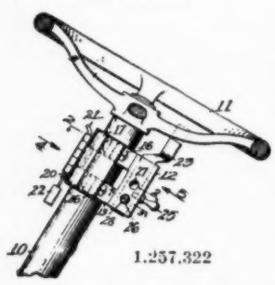
The remarkable growth in the production of various automobile accessories shows what a fine field there is for the hardware dealer in the sale of such commodities. There are hundreds of auto accessories which can be sold profitably by hardware dealers. The demand for these is great, and is increasing all the time. The trouble with many retail hardware dealers is that they are afraid that they will be taking a risk by selling automobile accessories. They want to stick to their old way of doing business, shutting their eyes to the profits that may be made by taking in something new. This is foolish and hinders their progress. A word to the wise is sufficient. The demand for auto accessories is great. Let hardware dealers make the most of it.

ADVISES SENDING OUT A PAMPHLET.

Many of the larger hardware firms issue catalogs for the auto accessories which they sell. This is a most commendable plan for such companies, but there are smaller dealers who cannot afford to get out a separate automobile accessory catalog. For such dealers it would be advisable to issue pamphlets from time to time to auto owners, calling their attention to the fact that they can supply their needs by trading with that particular hardware store sending out the circular. This plan has been put into practical operation with much success by various small hardware dealers throughout the country, and could be used to good advantage by others who wish to promote their business in this line.

PATENTS AN AUTOMOBILE LOCK.

Under number 1,257,322, United States patent rights have been granted to James E. Cunningham, Worcester, Massachusetts, for an automobile lock described herewith:



In a device of the character described, the combination of a casing, a bolt carried thereby for engaging a steering wheel and locking it in position, means for locking said bolt in position, said casing having a slot therethrough, a handle extending through said slot for operating the bolt, said casing having a pair of semi-circular supporting members adapted to fit against the steering column, a pair of semi-circular members adapted to register therewith, bolts for securing said members together to clamp the casing around the column, two members for preventing the displacement of the last named bolts, and means separate from the bolt for holding said members in position.

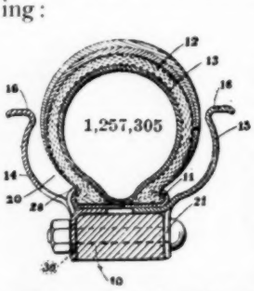
MANUFACTURING FIGURES SHOW LARGE INCREASE IN SPARK PLUGS.

All the leading manufacturers of spark plugs testify to the fact that production has increased enormously in the last few years, and is continually increasing at the same rapid rate. The figures of one of the spark plug manufacturing companies show that during the last year the company produced twenty-four million spark plugs. This exceeded by far the best expectations of the manufacturers. It was eighty times as great as the production in 1910. There was not one month during 1917 that the production was not at least four times as great as that during the entire year in 1910. The number of spark plugs manufactured in 1917 surpassed that of 1916 by more than 10,000,000. The figures of other firms show a similar increase.

These statistics should not be overlooked by the hardware dealers. They should not be considered dry, uninteresting, or unimportant. There is a great deal of significance to the retail hardware man in this vast increase in the manufacture of spark plugs. If the production is great, the demand must also be great, and since the demand is great why shouldn't the retail hardware dealer partake in the profits which are made through supplying this demand? There is also another important consideration. If the hardware dealer advertises the fact that he has for sale a stock of the standard makes of spark plugs, and gets the people to come to his store to buy this article, he can also get them to come to him for many other articles which they may need. The possibilities thus opened for building up a prosperous business are unlimited.

PROCURES PATENT FOR TIRE GUARD.

Frank C. Bitzenburger, Los Angeles, California, has procured United States patent rights, under number 1,257,305, for a tire guard described in the following:



In a tire guard, the combination with a pneumatic tire casing mounted upon a demountable rim and disposed around the felly of a vehicle wheel, of a guard plate positioned at one side of the pneumatic tire and having a flange resting against the side of the felly and tangs resting between the felly and rim, a second guard plate positioned at the opposite side of the pneumatic tire and having tangs resting against the side of the felly and a flange resting between the felly and rim, and bolts inserted through the flange at one side of the felly, through the felly, and through the tangs at the other side of the felly.

The merchant's stock-keeping should be as carefully attended to as the handling of his money.

ADVERTISING CRITICISM AND COMMENT

Helpful Hints for the Advertisement Writer

The reader of an advertisement wants to receive information. He wants to be shown something. He does not want to be bothered with questions. Of course, the reply is often made that questions are not asked for the reader to answer, but that they are simply rhetorical questions, and in most cases are answered by the advertiser himself. However, it should be remembered that the reader sees the question before the answer, and resents the liberty taken by the advertiser to put queries before him, when he should tell him something. This is one of the weaknesses in the decidedly poor advertisement of the P. N. Harley Company, which appeared in the *Journal Herald* of Waycross, Georgia.

HOW WILL IT PAY YOU?
THEY ARE BUILT STRONG AND WILL LAST A LONG TIME.

THEY RUN EASY AND DO MORE AND BETTER WORK WITH LESS LABOR.

THEY DO NOT GET OUT OF ORDER.

YOU GET LARGER AND BETTER CROPS, BECAUSE YOUR GROUND IS BETTER PREPARED.

THEY HAVE THE LATEST LABOR-SAVING ATTACHMENTS.

THEY ARE AN INVESTMENT THAT BRINGS BIG RETURNS.

P. N. Harley Hardware Company

Another fault is in the setting of the reading matter entirely in capital letters. This is monotonous to the eye, just as telling a long story in one tone of voice would be to the ear. It grows tiresome and the reader loses interest in the advertisement long before he reaches the end of the reading matter. Variety in type, if not over done, would have been much more effective.

Perhaps the most serious defect in the advertisement is the utterly inappropriate means used to attract attention. A picture or sketch of a dog does not talk hardware to the reader. The two things are entirely unrelated. The space taken up by the illustration of the dog is wasted. It draws the attention of the reader away from the very subject which the advertiser wished to discuss with him. It is entirely out of place in a hardware advertisement.

The illustrations of the plow and harrow, while relating to the hardware trade, are disgustingly poor and would have the effect of keeping the reader away from the store instead of inducing him to trade there. The harrow looks more like a bird's eye view of a manufacturing plant. We are sure that if the advertiser had written to the manufacturers of the articles he could have obtained electros of the implements. A few good illustrations, a little description of the features of the articles, and mention of the prices, wherever possible, would convert this wasted space into a real advertisement.

* * *

Two important details in writing a successful, result-bringing, attractive advertisement are:

1. Stating clearly and concisely the advantages and features of the article or articles on sale in such a way as to appeal to the prospective buyers.

2. Giving the price of the commodity or commodities advertised.

These two features, if dealt with properly, will hold the interest of the buyer and will make him want to trade with the company. Because it observes both of these details, the advertisement of Martin's Hardware

Carbonoid Magic

SOOT DESTROYER AND CHIMNEY SWEEP

Will Destroy Soot in Chimney, Stove, Range, Furnace Pipes Without Dust, Dirt or Odor

2-POUND PACKAGE

35c

Martin's Hardware Store

363 KING ST.—OPP. BURNS LANE

Store, reproduced herewith from the *News and Courier* of Charleston, South Carolina, is well written, and capable of bringing profitable results. The article on sale is given the proper prominence in the advertisement, and its advantages are told in a clear and concise manner. The price of the article is then given in easily legible type. The advertisement is neatly arranged and, another important factor, it has a good amount of white space. This always improves the appearance of an advertisement.

HEATING AND VENTILATING

INSTRUCTIVE MEETING IS HELD BY ILLINOIS CHAPTER HEATING AND VENTILATING ENGINEERS.

A discussion of the report of the Committee on Standardization, which brought out several instructive phases of the question, gave a tone of lively interest to the monthly meeting of the Illinois Chapter of the American Society of Heating and Ventilating Engineers which was held Monday evening, March 11, 1918, at the rooms of the Chicago Engineers' Club, 314 Federal Street, Chicago. The practical impossibility of standardizing pipe sizes in the present state of the industry was clearly indicated. The consensus of opinion was to the effect that it is more important to standardize methods rather than materials.

Dr. E. Vernon Hill, President of the Illinois Chapter, was to have given an illustrated lecture on the "Little Things of Life." Owing, however, to certain difficulties in obtaining microscopic slides of bacterial life with which to supply the material for the lecture, he changed his subject to that of "The Kingdom of Dust." Before proceeding with his very entertaining and informative talk, he exhibited an instrument which is used for gathering dust from the atmosphere for microscopic examination. He explained its workings and told how each stroke of the pump of the instrument gathers dust from the equivalent of four cubic inches of air.

In the explanatory introduction to his address, Dr. Hill stated that the general conception of what dust really is lacks accuracy and often is erroneous. Dust he defined as "matter out of place." Particles of dust contain everything under the sun. Some of them are so small as to be absolutely outside the field of the most powerful microscope. No method known to science is capable of directly detecting their presence in the atmosphere. The ultra-microscope does not reveal particles themselves but only their halo of light. Dr. Hill showed how impossible it is to determine with complete certainty the amount of dust in the air, saying that this can be done only in a relative sense. The bearing of dust upon life and industry is of much greater significance than is generally known.

Dr. Hill classified dust under three groupings, namely, physical, chemical, and bacteriological. He declared that dust, especially in manufacturing processes, is often fraught with great danger to the health of our bodies. The sharp jagged edges of many different particles which he projected on the screen have an irritating effect upon the respiratory passages and are responsible for many diseases of the breathing apparatus, particularly the dreaded White Plague. In the specimens of dust which he showed on the screen were revealed coal, hair, wood, glass, sand, cotton, wool, iron, stone, etc. The specimens were taken from various sources—some from cigar factories, others from machine shops, others from coal rooms, pattern shops, and traffic-congested streets.

Following Dr. Hill's lecture an interesting address was given by August Kehm, president of Kehm Brothers, heating and ventilating contractors of Chicago. Mr. Kehm described the heating system in use at the Rockford, Illinois, cantonment, and illustrated his subject with a blackboard talk. His description of the system which his firm installed was characterized by a clearness of explanation which left little to be desired.

MAKES VALUABLE SUGGESTIONS.

A small monthly pamphlet or magazine is issued by F. Meyer and Brother Company of Peoria, Illinois, in the interests of warm air heater dealers and installers. It contains such valuable suggestions with regard to getting business that we take pleasure in reproducing some of them for the benefit of our readers, as follows:

Keep your ear to the ground—yes, and your eyes open too—for the new business that is to come your way this year. Thousands of business men in the United States are going to say at the end of this year: "It has been the best year I have ever had." Will you be among them? Here are a few suggestions that will help you to be—if you heed them:

Make it a point this year to go after business. Get out and away from the store occasionally and keep looking for signs of a new building—business or residence. If you see an excavation being started or a foundation being layed or the framework of a structure being erected don't rest until you have found out who is putting up that building.

And after that it is up to you to convince that owner that you are the proper man to give the contract to for the tin work and heating system. But don't stop with your own town. Get out into the country around your town—and over into the next town. If growth is what you are after this year your trade territory must grow too. No business man ever really grew as long as he recognized definite limits to his territory. Go wherever you can go if business awaits you—exactly the same as other mercantile houses have invaded your field with what they had to sell.

If you can do so, get someone to supply you with all the building permits or other news pertaining to new buildings as soon after they are started (or planned for) as possible. In fact, make it a business slogan with you this year. Keep your ear to the ground, keep your eyes open, and go after business!

GOVERNMENT SPECIALIST SHOWS HOW TO ECONOMIZE FUEL.

A startling statement is made by Henry Kreisinger in a pamphlet just issued by the Bureau of Mines of the Department of the Interior. It is to the effect that, if everyone in this country would do his part in saving fuel, the economy thus achieved would easily amount to twenty million tons of coal in one year, or nearly as much as all the coal mined in France during the present year. The facts and instruction contained in this pamphlet are of incalculable value to dealers and installers of warm air heaters. Not only can dealers and installers promote their own business by bringing these facts and instructions to the notice of their present patrons and prospective customers, but also they can do a much needed work of patriotism by helping give the information as wide a currency as possible. So important is the pamphlet that it is herewith reproduced in full:

Five Ways of Saving Fuel in Heating Houses.

By Henry Kreisinger.

This country faces a shortage of coal, and it is the patriotic duty of every citizen to save coal in heating his home. About 25,000,000 homes in this country are to be heated through the winter. If everybody "does his bit," a ton of coal at each home can be saved easily during the winter. For the entire country this saving would amount to 20,000,000 tons of coal, which is nearly as much as all the coal mined in France during the present year. Five ways in which coal can be saved are as follows:

1. Of the coals available in your market select the one that requires the least attention in burning.
2. Use an economical method of burning your coal.
3. Keep your house temperature 62° to 65° F. instead of 72° to 75° F.
4. Heat as few rooms as the comfort of your family will permit.
5. Shorten the heating season as much as possible.

1. Selection of Coals.

In house-heating equipment the fires can be given very little attention, therefore fuels that require little attention in burning are the most economical and give the best satisfaction. In time of war less desirable coal may have to be used, in order to simplify transportation problems, but the fact remains that some coals are more efficient than others when the same attention is given the fire. Usually the man of the house can attend to the furnace early in the morning and again in the evening. During the day the furnace is left in the care of the housewife or the servant. The housewife has her children, the preparation of meals, and other cares to take up her time, so that she can not give the furnace much attention. In some houses the furnace is attended only when the house becomes either too hot or too cold, and thus the fire is allowed to run from one extreme to the other, conditions which are very unfavorable to saving of fuel. About the same attendance can be expected from a servant.

Therefore, in order that a fuel may be burned economically in a house-heating furnace, the fuel used should be of such kind that the fire requires little attention. The following fuels, in the order named, are the best fuels for house-heating purposes:

Anthracite coal in sizes from ½ inch to egg size.

Gas-retort or metallurgical coke in pieces ½ inch to 3 inches across.

Coal briquets 2 to 3 inches in diameter.

Screened Pocahontas (semi-bituminous) coal over ¼ inch and through 3 or 4 inch screen.

Sized bituminous coal in pieces ½ to 3 inches across.

If these fuels can be bought, fine sizes or slack coal or other fuels requiring frequent attention when burning should be left for power plants where the firemen can and should give the fires frequent attention.

2. Use An Economical Method of Burning Your Coal.

Because of the great variety of fuels used for house-heating purposes, and because of the great variety of house-heating equipment and conditions of operation, only the most general rules can be given for firing the fuel. The details must be determined by actual trial in each furnace.

The conditions under which house-heating apparatus is used are difficult to meet. The temperature of the house is to be kept uniform, with the firings far apart and with little attention given to the fires. The questions for each household to decide are: How much variation in the house temperature can be tolerated, and how much attention can be given to the furnace. The kind of heating apparatus has a great deal to do with the uniformity of the house temperature and the amount of attention that must be given to the fire. Hot-water systems will give much more uniform temperatures with less attention to the fires than hot-air systems. No one set of rules will work satisfactorily in all cases.

Firing Anthracite.

When firing anthracite, the best results are obtained by spreading the coal evenly over the entire fuel bed. The fire should not be allowed to become too low before putting on a fresh firing. A fuel bed 5 to 10 inches thick gives good results. The fire should be distributed as little as possible.

Firing Briquets.

Briquets when properly made are very good fuel for house-heating purposes. However, the supply is decidedly limited. When burning briquets the fuel bed should be kept 8 to 12 inches thick. The fresh charges should be spread evenly over the grate area. The fire must not be disturbed. Poking breaks the briquets and spoils the fire.

Firing Semi-bituminous Coals.

The semi-bituminous coals of the Pocahontas type are good fuel for heating a house. They are nearly smokeless and make but little soot. For regular firing, the coal can be spread evenly over the entire fuel bed; or, it can be fired like bituminous coal, the fresh charges being placed alternately on one side of the grate and part of the surface of the fuel bed left uncovered. The alternate method should be used if the firings are heavy. The fire keeps better over night if the last firing is heaped to one side of the grate. Good results are obtained with fires 8 to 10 inches thick.

Firing Bituminous Coals.

The bituminous, or soft coals are smoky and cover the flue surfaces with a large amount of soot and tar, which reduces the transfer of heat and impairs the draft. Bituminous coal should be fired by placing the

fresh charge on one side of the grate only, leaving part of the surface of the fuel bed uncovered. The volatile matter rising from the freshly fired coal is ignited by the red-hot coal of the uncovered part of the fire and a large part of it burns.

If the entire surface of the fuel bed is covered with a heavy charge, the volatile matter from the fired coal does not ignite for a considerable length of time after firing and passes away unburned as tarry, greenish-yellow smoke. The furnace and the flues become filled with the smoke and when the fire finally works its way through the fresh layer of coal the smoke and the gases may ignite with an explosion violent enough to blow the pipes down and fill the house with smoke. These explosions are particularly apt to happen if the coal contains much slack; therefore, with such coal particular care should be taken that part of the bright fire remains uncovered. This method of firing reduces the amount of soot deposited in the flues so that less frequent cleaning is necessary; it also reduces the heat losses from incomplete combustion, thus directly effecting a saving of coal.

Draft Regulation.

Draft regulation is perhaps the most important factor in burning coal efficiently in house-heating furnaces. The draft is regulated mainly with three dampers; one of these is on the ash-pit doors, one on the firing door, and one in the pipe connecting the

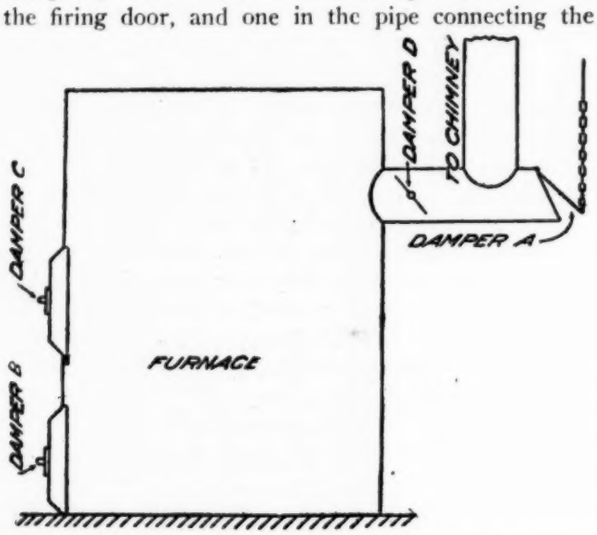


Figure 1.—Position of dampers in a house-heating furnace. Damper A regulates the draft in the furnace and should be used with dampers B and C. Damper B regulates the supply of air through the grate and the rate at which the coal burns. Damper C regulates the supply of air over the fire and the completeness of combustion. Damper D controls the draft and should be used with damper A.

furnace with the chimney. For many furnaces the damper in the flue pipe is an opening covered with a hinged lid A, in figure 1. When this lid is closed the full chimney draft is effective in the furnace. When the lid is lifted, the chimney draws air from the cellar instead of drawing the gases out of the furnace, and the draft in the furnace is reduced almost to nothing. Between the two extremes any draft can be obtained by proper adjustment of the lid.

The damper B. on the ash-pit door regulates the flow of air through the fire, and the amount of air flowing through the fire determines the rate of combustion, or the amount of coal that the furnace can burn in an hour. Therefore, to control the rate of combustion and thereby regulate the amount of heat the furnace delivers to the house, the furnace attendant adjusts the damper in the ash-pit door and the damper to the chimney.

The damper C. in the firing door supplies air over fire needed to burn the gases rising from the fuel bed; therefore, its regulation controls the completeness of combustion of these gases. When soft coal is burned a large volume of combustible gases rises from the fuel bed immediately after the firing; therefore, the damper in the fire door must be opened enough to allow the air necessary for burning the gases to enter the furnace. After the smoky gases cease to rise from the freshly fired coal, the quantity of air supplied over the fuel bed can be reduced by partly closing the damper in the firing door.

There should be a damper, D, in the smoke pipe; this damper can be used in addition to damper A to control the draft.

No rule can be given for the exact adjustment of the dampers. The proper adjustment must be ascertained by trial; with a little care and some patience the proper adjustment of the dampers of any furnace can be determined. In general, to make the fire burn faster, close the lid A (fig 1) in the pipe leading to the chimney and open the damper B (fig. 1) in the ash-pit door. To make the fire burn slower, raise somewhat the lid in the check draft A and partly close the damper B in the ash-pit door. The damper C in the firing door is more difficult to adjust because there is no way to determine the completeness of combustion. In burning soft coal this damper should be slightly open all the time. In burning hard coal or coke enough air for complete combustion may enter the furnace through various leaks, even when the damper is completely closed.

3. Keeping the House Temperature Lower.

In heating houses considerable fuel can be saved by keeping the temperature in the house 5° to 10° F. lower than is customary; instead of the temperature being between 70° and 74° F., it can be kept between 62° and 68° F. without any discomfort or any danger to health. In fact, some medical authorities ascribe the "colds" common in winter to living in too warm houses. Thus Dr. William Brady writes:

Air need never be heated above 65° F. for comfort. Anything above that point represents waste and extravagance. It simply runs up a big coal bill and opens various doors to the coming of the doctor. The onset of cough in winter is almost a sure sign of such extravagance.

Those interested in saving the country's fuel and lowering their own coal bills will be glad to know that keeping the house at 65° instead of 72° F. means a saving of 15 to 20 per cent of their fuel. It may also mean a saving on the doctor's bill.

Keeping the house temperature lower is the easiest way to save fuel. It is fuel saved by doing less work. As to the question of health, more sickness is caused by having a house too warm than by keeping it too cold.

4. Heating Fewer Rooms.

Another easy saving of fuel can be effected by heating fewer rooms in the house. In many houses the

family can get along comfortably by keeping warm three or four rooms instead of heating six or seven rooms. And this can be done without any real hardship on the family. If one stops to think that 55 per cent of the families in Berlin, Germany, live, sleep, cook, and eat in the same room, living in three or four warm rooms will seem a comfort. Really only the three rooms in which the family lives need to be heated at all. If consumptives can get well by sleeping outdoors, why could not well people keep well by sleeping in unheated bedrooms with the windows wide open?

5. Shortening the Heating Season.

In some homes the furnace is started too early in the fall and is run too late in the spring. The chimneys of these homes are belching smoke and spreading soot over their neighborhood, while the neighbors keep windows and doors open to the outside air and even sit on the front porches. These faint-hearted people in their fear of catching cold heat their houses unnecessarily; thus they waste the country's coal, increase their coal bills, invite sickness into their homes, and make life unpleasant to their neighbors. When mornings and evenings are chilly a grate fire for a short time in one or two rooms will make the house comfortable.

Conclusion.

Every householder by endeavoring to save coal in the ways suggested can render his country valuable service, and he will not be doing his full duty toward his country unless he renders such service as he can. In addition, he should remember that besides helping his country he will help to shorten the misery and the horror of the great war.

SAVES MONEY ON COAL BY OBSERVING GOVERNMENT RULES FOR RUNNING WARM AIR HEATERS.

An interesting example of fuel conservation by the proper running of a warm air heater is presented in the case of a certain university professor who saved as much as $100 one winter by the careful and intelligent application of the rules issued by the Government Bureau of Mines for the operation of warm air heaters. Such a saving is of great importance at the present time. The money put aside in this way acn be used to buy liberty bonds, as is advised by Director Manning of the Bureau of Mines to the householder of the country. In order that other people may benefit by these rules they are appended herewith:

Ascertain by experiment what fuel and what method of using it are best suited to your warm air heater.

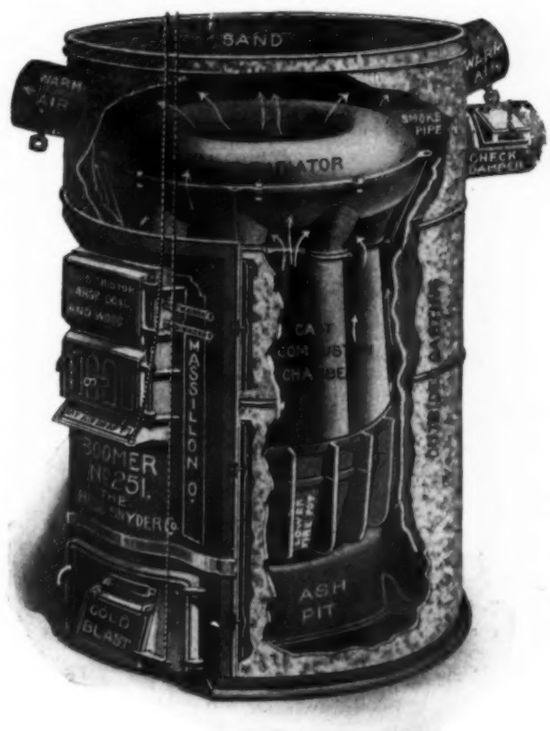
Keep the heat-absorbing surfaces of the heater free from dust and soot by regular cleaning.

Have your heater large enough to meet continuously and without attention for periods of eight hours the demands for heat in all except most severe weather.

Be sure your heater has sufficient draft. Principal causes of insufficient draft are: Chimney too short or having its top near a high object. Chimney or gas passage of heater clogged with soot or debris. Leaky connection of smoke pipe to heater or chimney. Clogging of fuel bed by clinkers. Too great length of horizontal smoke pipe between heater and chimney.

CLAIM BOOMER WARM AIR HEATERS GIVE SATISFACTION.

If manufacturers wish to work up for their warm air heaters a reputation for giving satisfaction they must see to it that their products possess such features as will enable them to perform their functions to the highest degree of efficiency. When they have succeeded in working up such a reputation, their products will not only be beneficial to themselves, but also will constitute a source of great profit to dealers and installers. For this reason, it is said that dealers and installers will find it to their advantage to sell the Boomer Warm Air Heaters, manufactured by the Hess-Snyder Company, Massillon, Ohio. The accompanying illustration shows the Boomer Number 251 Warm Air Heater for soft coal, coke, or natural gas. The manufacturers claim that they have put into their warm air heaters the very features which enable them to give the right kind of service, and that they have been rewarded by establishing a reputation for perfect satisfaction.



Boomer Warm Air Heater, Number 251, Made by Hess-Snyder Company, Massillon, Ohio.

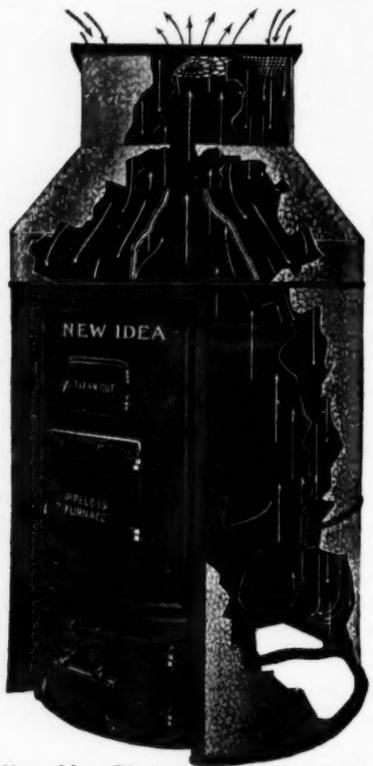
The entire warm air heater is made of cast iron. The combustion chamber is made in one piece, 24 inches high. It rests in the cup joint on top of the fire pot. It is round at the bottom, and gradually draws into deep corrugations at the top, thereby increasing the radiating surface and giving the casting great strength. In the top of this section, divided equally around its circumference, is a series of holes leading into the top return flue radiator. By this method of outlet the fire is all drawn and equally distributed to the entire outer surface of the combustion chamber making it all intensely active radiating surface. Other important features of this warm air heater are the top return flue radiator which is of cast iron construction, the fire pot which is made in two parts and heavily ribbed, and the ash pit and base ring. The top of the ash pit, it is claimed, will

not crack, and the ash pit is, therefore, gas and dust proof. Dealers and installers may obtain the company's latest catalog, number 25, which contains full information regarding the Boomer Warm Air Heaters, by addressing the manufacturers at Massillon, Ohio.

SHOWS HOW NEW IDEA PIPELESS WARM AIR HEATER MARKS AN ADVANCE IN THE HEATING LINE.

The fallacy of the theory, "What was good enough for grandfather is good enough for me," has been demonstrated long ago. It originated in the far remote past among the Chinese people. It was the belief in this theory that retarded the progress of these people for such a long time and kept them groping around in the darkness while other nations were getting the benefit of new ideas and inventions. Of course, one should not go to the opposite extreme and declare that anything which has been in vogue for a considerable period of time must be discarded entirely for something new regardless of the merits of the latter. Old conditions, ideas and material things should give way only when something better has been discovered, and the people must not be slow in accepting the new things after they proven their advantages over the old.

We can illustrate the foregoing statements by a practical example which presents itself in the heating and ventilating field. The Utica Heater Company, Utica, New York, Chicago, Illinois office, 218-220 West Kinzie Street, manufacturers and offers for sale to dealers and installers the New Idea Pipeless Warm Air Heater, shown in the accompanying illustration. As its name implies, it is something new in this field. However, the company does not ask dealers and installers to accept it merely because it is new. Its claim for the superiority of its heaters is based on the advantages which it has over the old style heater. The following are some of the advantages claimed for the New Idea Warm Air Heater:



New Idea Pipeless Warm Air Heater Manufactured by Utica Heater Company, Utica, New York.

It uses less fuel.

It causes no ill health or inconvenience.

It reduces the fire risk to a minimum.

It requires attention only once or twice a day.

It will heat every room of the average sized house.

The manufacturers advise dealers and installers to share in the benefits due to the advantages of this New Idea. They will gladly supply a copy of their latest catalog, and also their agency proposition to all those who apply.

BUSINESS MAN OUTLINES HIS CREED.

"I will be a business man. I will so operate my business that I may be able to prove that I am a business man. Myself and all those who work with and for me shall at all times be most courteous to customers. Uncivil language is not a part of real business. Those who would give us opportunity for increasing our profits shall be given the utmost consideration. The 'voice over our telephone' shall not be one that offends. We will always bear in mind that our mission is to serve, not to be served. From serving comes our business growth, and the rapidity of this growth is determined by the quality of our service.

"I will employ proper methods in my business at all times. I will always know the condition of my business, and of each department of my business. I will make my business methods tell me a true story of my business. I will know my losses and my gains and will endeavor to check my losses and increase my gains. I will maintain a system that is adequate to my needs.

"I will plan for new business, for the invasion of fields from which I have not secured business heretofore. I will aim at the acquisition of new customers and the sale of goods for which there is a demand or for which I can create a demand but which have not brought me revenue heretofore. I will be clean. I believe filth is a disgrace. The daily grime of toil and the accumulated filth of neglect are not the same. I will remove all filth from my place of business. I will keep my corners clean. I will keep clean the clothes of myself and my co-workers. I will scrub the floor of my office and store regularly. I will keep my windows clean. I will not permit the disorderly arrangement of anything in my place of business. I will never be content to be 'average.' I will excel.

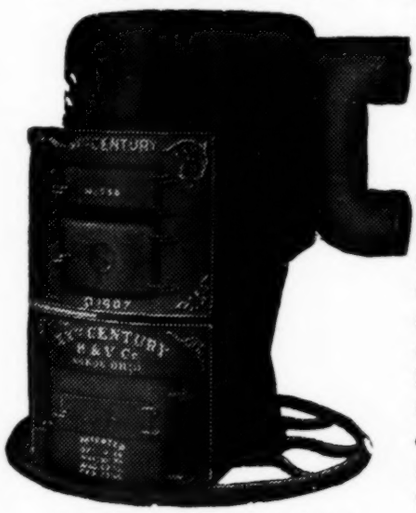
"I will try to enlist the co-operation of my co-workers in the upbuilding of the ideal toward which I strive. If I must succeed they must help me. Without their full co-operation I am handicapped. I will make my place of business my best advertisement. It is always my greatest advertisement, and I will make it an advertisement for good. When the stranger enters his eye shall be met by that which is pleasing. His desires shall be met with promptness and completeness. He shall be made—and kept—satisfied.

"I will make the reputation of my work an asset. The botch job shall have no part in my plan. People shall bring work to me because they know I will do it well. They shall know this because they shall know that I have done well. I will build up my business for posterity. I will so build that the community may benefit from the part I have played. I will so build that those dependent upon me may receive from my business that to which they have a right in life—even after I have gone. It is my desire that the world shall be better for my having lived."

ATTAINS HIGH RESULTS BY APPLYING PRINCIPLES OF COMBUSTION.

When manufacturers aim to construct a warm air heater which will give the proper amount of heat, and which will prove satisfactory in every way, they cannot go about their task in a haphazard manner. They must study their subject, and study it extensively. They must acquaint themselves with all the principles and laws regarding combustion. After they have done this, they must be able to apply their knowledge in the building of the heater. Unless this is done, their attempts to realize profits through their product will be futile. Incorrect and unscientific construction prevent the heater from doing those things for which it was intended.

Knowing this to be true, the Twentieth Century Heating and Ventilating Company, Akron, Ohio, before making its warm air heater conducted a long and careful research in order to learn all the theories and natural laws pertaining to the perfect combustion of fuel. Not until this was done did they attempt to produce their Twentieth Century Warm Air Heater, an illustration of which is herewith presented. Furthermore, it is claimed by the manufacturers that they not only collected all the knowledge possible, but also applied the principles in the manufacture of their heater. It is declared that the following results have been the reward of the manufacturers for their efforts: Abundance of Heat; Reduced Fuel Bills; Increased Durability; Greater Cleanliness; Better Service at Less Cost. The manufacturers are anxious to hear from those who are interested in the heating line, and announce their willingness to provide them with all desired information regarding the Twentieth Century Warm Air Heaters.



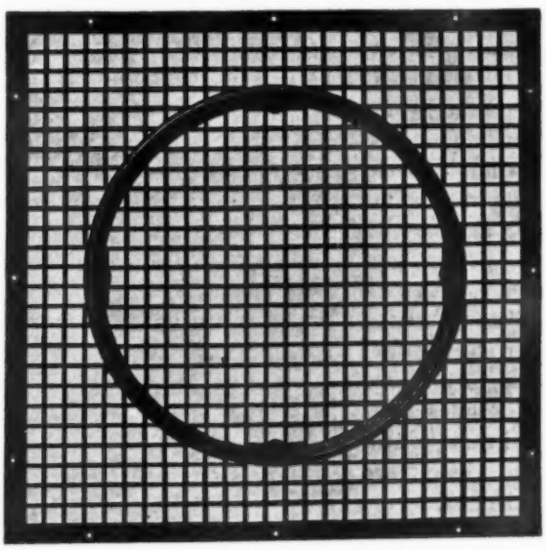
XXth Century Warm Air Heater.

DEALERS AND INSTALLERS WHO MAIL COUPON GET INSTRUCTIVE BOOK.

An instructive booklet, "How to Make a Real Plant of the Pipeless Furnace," is given away absolutely free of charge to dealers and installers by the Rock Island Register Company, Rock Island, Illinois. The company has an advertisement in this week's issue of AMERICAN ARTISAN AND HARDWARE RECORD, in which there is a coupon. By filling this out and mailing it to the manufacturers, the dealer or installer may obtain one of these helpful books. As its title indicates, the book gives instructions on the installation of a heating plant which, it is declared, are sure to be of assistance to the dealer or installer in his work. The company maintains that its Rock Island Registers are in a class by themselves, as they are the only Guaranteed No Streak Wall Registers. Filling out the coupon takes up very little of the dealer's or installer's time, and it is therefore wise to attend to this at once in order to procure the booklet.

MANUFACTURES DOUBLE GRATING FOR PIPELESS WARM AIR HEATER.

Like many other improvements which, when first introduced, were declared to be impractical, theoretically wrong, and utterly infeasible, the pipeless warm air heater has overcome all objections, has disproven all the arguments advanced against it, and has clearly demonstrated its feasibility and practicability. It is consequently growing more and more popular every day. The demand for it is steadily increasing. Whatever opinion the dealer or installer may have had regarding it when it was first presented for the approval of the public, whatever may have been his prejudices, the fact remains that the pipeless warm air heater is satisfactory to his trade, and he must be prepared to provide every article necessary for the successful operation of this kind of a heater.



Walworth Double Grating for Pipeless Warm Air Heater, Plain Lattice Design.

It will be to the interest of the dealer and installer, therefore, to get in touch with the Walworth Run Foundry Company, Cleveland, Ohio, as it is now manufacturing the Walworth Double Grating, shown in the accompanying illustration, for the pipeless warm air heater. The square part is for the cold air return, and the round center for the warm air supply. These gratings are made in seven sizes, from 22x24 to 45x45. The company declares that its stock of gratings is complete, and that orders for any quantity will be given speedy and satisfactory attention. The dealer or installer may get the latest catalog containing information relative to these gratings, and also a discount sheet by addressing the company.

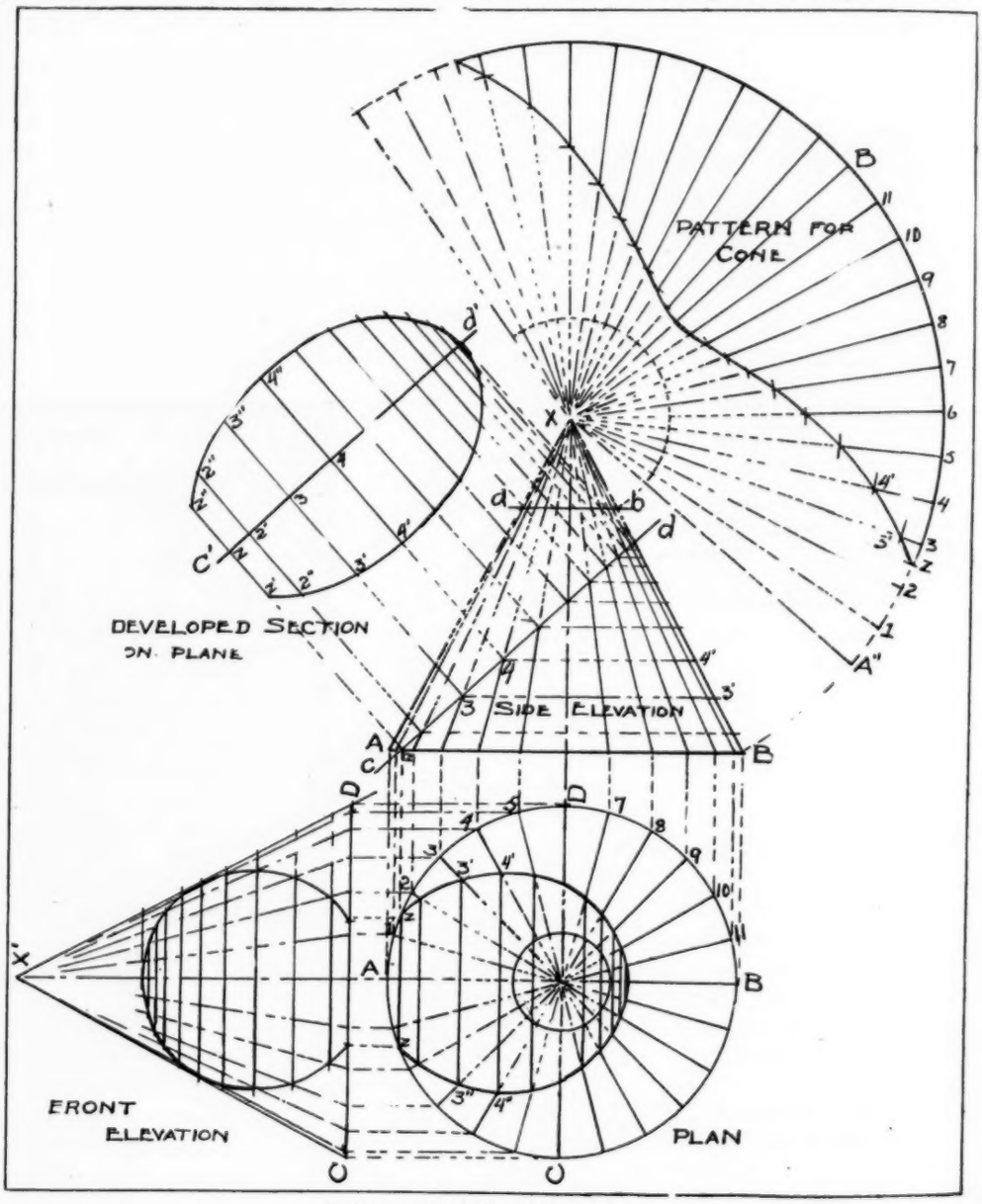
The chap who goes around with a chip on his shoulder may be an expert poker player, but not necessarily.

PRACTICAL HELPS FOR THE TINSMITH

PATTERNS FOR CONIC INTERSECTIONS

BY O. W. KOTHE.

To continue our treatise on conic intersections, we will now take up the problem of cutting planes through any desired location of a cone. Observe the side elevation and notice the line a-b is drawn at right angles to the center axis. This makes the lower portion a frustrum of a cone for a taper joint as we call it; but to draw an inclined line as c-d it gives an entirely different fitting. The plan is described equal to the radius of base and divided into any number of equal spaces, 24 in this case. Lines radiated to the center and also extended to the base line in side elevation from which points lines are radiated to the apex X. Now it is of great value to know how to obtain the different views for this problem as well as the developed section and the pattern.



Patterns for Conic Intersections.

Observe how lines are dropped from each point where line c-d intersects the radial lines as 3-4, etc., into plan, thus cutting radial lines having similar number as 4'-4', 3'-3', etc. A line traced through these points produces the plan view looking into the cut produced in the cone. By simply shifting the side elevation with its points as shown by the front elevation, we establish the miter cut when looking at it from a front view. This is very interesting projection work and requires good concentration.

Now observing from both the plan and front elevation neither views gives us the edge view or true length of the cut, c-d. To obtain this square out lines from each point in line c-d and draw a line c'-d' parallel to c-d. With dividers pick the length of cross lines working from the center of plan and step them off as z-z'-z", 2-2'-2", 3-3'-3", etc. Continue in this way until all points are established and then trace the eliptical curve which gives that view or true edge when looking directly onto the face of line c-d.

The pattern for cone is very simple and is developed by the radial line method. Set dividers to X as center and B as radius and strike an arc indefinitely. Step off the stretchout and draw lines to the apex. Now the workman must observe the radial lines in

side elevation are foreshortened and therefore when each line intersects the line c-b, project over horizontal lines X-b as in points 3′-4′, etc. This transfers the foreshortened line to the outside surface which is a true length. Now with compasses set to X and each of these points as radius describe arcs into pattern and establish points as shown. This gives the pattern for the full cone also the pattern for the frustrum of a cone, and the pattern for the cut-away, both below and above the line c-d. Each of these views should be carefully studied out and tried out to know their value in applying their principles to much other work in sheet metal.

NATIONAL ASSOCIATION OF SHEET METAL CONTRACTORS PREPARE TO FORM WAR SERVICE COMMITTEE.

In harmony with the resolutions on the matter adopted by the Chamber of Commerce of the United States, the President of the National Association of Sheet Metal Contractors, George Harms of Peoria, Illinois, is devoting considerable thought to the subject of choosing members for the War Service Committee to represent the interests of his organization. The purpose of this committee is to aid in procuring necessities of war, promoting the requirements for the public welfare, and to preserve industries for peace. Mr. Harms called upon all sheet metal contractors, whether members of organized bodies or not, to cooperate with his Association for the formation of a War Service Committee. In an appeal sent out to the trade, he says:

"Realizing the importance of industries organizing and being represented by a small war service committee, I have been requested to appoint a committee for this purpose. The selection for members of this committee should be from such who are able and willing to devote their time for this patriotic duty and the members should be so located as to be in close touch with Washington and at least one or more should be in constant touch with the proper government officials. It should be made possible for them to meet often without unnecessary expense. Therefore, these members should be located in or near Washington, D. C.

"I therefore consider it my duty to appoint a committee for this purpose within the very near future. It is not the intention of the Government to deal directly with a Trade Association, but Government officials realize that through these associations, they come in contact with the larger majority of those engaged in a particular line of industry.

"It is very important that all local associations of sheet metal contractors and also representatives of the sheet metal trade in cities that are not now organized, appoint proper committees for this purpose. The National Committee will then remain in touch with them constantly. The letting of contracts for sheet metal work and the execution of these orders, will very much expedite the work and assist our Government in their war service.

"It is evident that the War Service Committees can be of great use to the Government and to the industry, but to reach the fullest service such committee should be formed in a thoroughly democratic manner. All engaged in the industry should meet and, after careful discussion, committees should be elected representing both large and small plants and composed of men of a thorough actual acquaintance with the business and the conditions prevailing.

MAKES NEW RULINGS ON EXPORT OF TIN PLATE AND TERNEPLATE.

New rulings regarding the exportation of tin and terneplate have been published by the War Trade Board. Under these new regulations licenses may be granted to manufacturers of tin plate and terneplate or to persons other than manufacturers, provided the purchase of the plate has been made directly from a manufacturer prior to November 12, 1917, and also provided such purchase has been made to fulfill a contract or firm order from a purchaser abroad placed with a firm in the United States, a copy of which must be annexed to the application. Export licenses for tin plate or terneplate may be granted only for shipment to Canada, South and Central American countries, including Mexico and the West Indies, China and Japan, and only when the plate is to be used either:

1. To manufacture containers for edibles for human consumption by the people of the nations at war with Germany or her allies, or

2. To manufacture oil cans, provided, that the plate has been ordered from the mill on or before August 27, 1917. In this case there shall be no distinction made between purchases from manufacturers and purchases from others, or

3. When the plate is to be shipped to any of the abovementioned countries except Canada, it is to be used for purposes which shall contribute directly to the successful prosecution of the war; or

4. When the plate is destined for Canada it is to be used for purposes for which tin plate or terneplate is now permitted to be used in the United States.

An affidavit must accompany the application in all cases to verify all the statements in the application. Evidence satisfactory to the War Trade Board to the effect that the tin plate or terneplate to be exported will be used for one or more of the purposes above stated must also be submitted with the application, together with a guaranty executed by the consignee or the actual recipient of the goods at destination, to the effect that the plate will be used only for the purpose set forth in the application. This guaranty may be executed either by a duly authorized representative in this country of the foreign consignee or recipient, or it may be filed by such consignee or recipient with the American consul nearest to the destination.

There will be no export license required for filled tin containers, containers lined with tin, or tin foil used as a wrapper on or as containers of licensed goods.

Export licenses may be granted for the sending out, except to European and African countries, of tin lanterns, tin-lamp founts, tinned rivets, tinned wire, printers' type, tin kitchen utensils, tin tableware

(not silver plated), tin sundries, tin toys, and tin specialties, and solder metal.

Licenses may be granted for phosphorized tin, white metal, and other tin alloys, and empty tin containers, if satisfactory evidence is presented to the War Trade Board that the goods will be used in such a way as to contribute directly to the successful prosecution of the war.

It will be possible to obtain licenses for tin-foil collapsible tin tubes and bottle caps, including tin-foil tissue, tin-foil sheets, tin-foil and paper sheets, composition foil, and pure tin foil, provided, the goods were ordered, completely manufactured, and ready for shipment prior to November 12, 1917. Licenses may also be granted for these commodities regardless of when ordered and manufactured if satisfactory evidence is presented to the board that the goods will be used to directly contribute to the successful prosecution of the war.

For tin scrap no license will be granted, except that licenses may be granted for crushed oil cans for shipment from the Pacific Coast to Japan when satisfactory evidence is presented that the cans have been received from Japan.

Licenses for the exportation of tin, pig tin, metallic tin, block tin, metallic tin pipe will not be granted except for such shipments as pass through the United States from England, in bond, for re-exportation to other countries.

The renewal or extension of any license issued on or before February 15, 1918, for the exportation of tin plate or terneplate, will not be granted, and in all such cases where exportation cannot be made during the validity of a license new applications must be filed in the regular way.

IS THE BEST TRADE JOURNAL.

To American Artisan and Hardware Record:

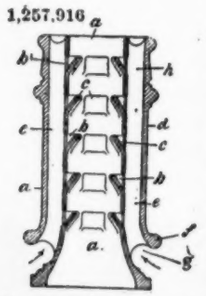
I cannot let the opportunity of renewing my subscription pass without expressing to you my opinion of your paper. I consider it the best trade journal in America. I find it indispensable for keeping up to date in my business.

J. Oscar Smith,
Sheet Metal Works.

Moberly, Missouri, March 10, 1918.

PATENTS A VENTILATING APPLIANCE.

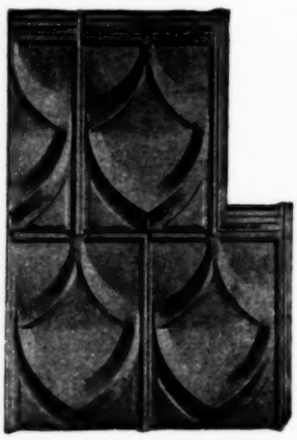
Under number 1,257,916, United States patent rights have been granted to Francis Evan Moss, Worthington, near Wigan, England, for a chimney, cowl or ventilating appliance described in the following:



A ventilator comprising an outer casing, an inner casing spaced from the outer casing, the bottoms of the two casings flaring outwardly, ribs extending throughout the space between and connecting the inner and outer casings to form vertical flues open at the top and bottom, the inner casing being provided with a plurality of superposed openings which form communication between the respective flues and the interior of the inner casing, each opening being surrounded by side walls and an upwardly inclined inner wall to direct the draft upwardly toward the center of the inner casing.

FREE BOOK GIVES TINSMITHS FACTS ABOUT ROOFING MATERIALS.

There is always a considerable amount of profit for tinsmiths in good roofing materials. No one knows this better than the tinsmiths themselves. The reason for this is that there are so many poor grades of roofing materials, such as shingles, etc., on the market that the demand for superior brands is always great. The tinsmith who can help supply this demand for something better in the roofing line is the one who will do the big business. Some are under the impression that real good shingles are exceedingly hard to find. They believe that it requires a long and extensive search.



Group of Cortright Oriental Metal Shingles.

However, it is declared by the Cortright Metal Roofing Company, Chicago, Illinois, and Philadelphia, Pennsylvania, that this is not the case if the tinsmith goes about the matter in the proper way. All that is necessary in order to get started along the right trail, according to the manufacturers, is to investigate the merits of the Cortright Metal Shingles. Furthermore, it is said that there is practically no effort required in doing this. The company offers free to tinsmiths a book called, "Concerning That Roof," which contains many helpful ideas on roofing of all kinds, and which gives the important facts about roofing materials.

The accompanying illustration shows a group of Cortright Oriental Metal Shingles. This pattern has the same side lock and top and bottom over lap as the other styles which the company makes. It is declared that these two features guarantee absolute protection against storms, and insure ease of application. This pattern is made in two sizes, 10 by 14 inches, and 14 by 20 inches. The Oriental shingle is one of the types described in the book. For further information it is advised that tinsmiths write to the company and obtain the book itself. This, the manufacturers maintain, is the first step along the path to large profits.

SAYS HE DERIVES GREAT BENEFIT.

To American Artisan and Hardware Record:

In sending herewith money order for the renewal of my subscription I wish to say that I derive great benefit from your publication. In my judgment, it is of extreme value to any sheet metal worker. Its fifty-two issues contain advice, help, and instruction worth more to a sheet metal worker than if he had to pay the full subscription price for each separate issue.

Very truly yours,
John F. Werner.

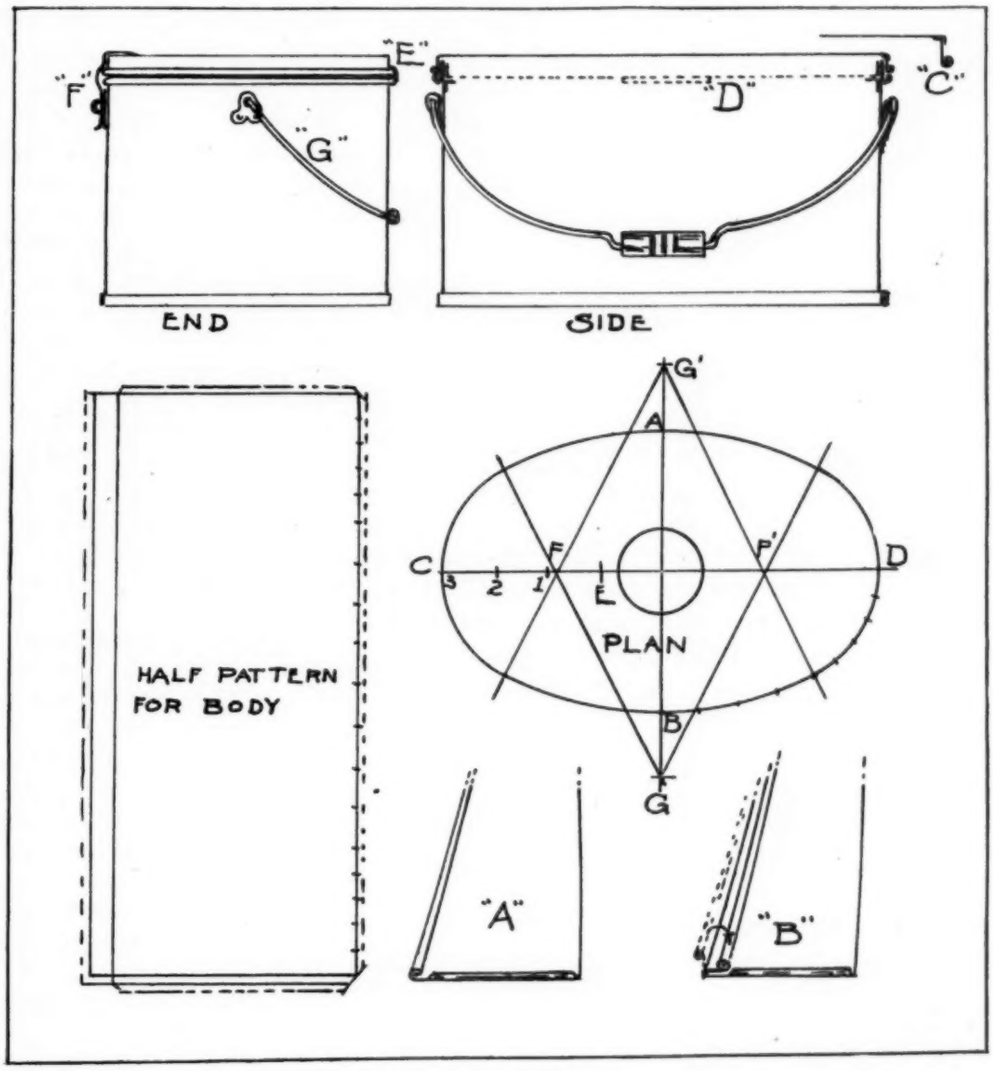
Stewartville, Minnesota, March 9, 1918.

PATTERNS FOR MINNOW BUCKET.

By O. W. Kothe.

Replying to the subscriber who desires a lay out for a Minnow Bucket, the accompanying drawing shows one style in common use.

Observe from the plan, the bucket is oval shaped, the sides being straight. The main feat is to describe the pattern for bottom. Therefore, draw lines at right angles to one another as A-B and C-D; making A-B equal to the width, and C-D equal to the length of oval. With dividers pick the short diameter A-B and step off on the long diameter as B-E. The distance which is left E-C divide into three equal parts. With dividers pick two of these parts as radius and using the center, step over points F and F'. These are the new centers for describing the end arcs. Next pick the distance between F-F' and set from the center as G-G'. Draw the divisional lines G-F-F' and G'-F-F'. These divisional lines separate, or mark the point of meeting between the end arcs and the side arcs. Now describe the end arcs from points F-F' and the side arcs from centers G and G'. This gives the plan and also is the pattern for bottom after a double edge for seaming is allowed.



Patterns for a Minnow Bucket.

The pattern for body is laid out by taking the circumference of oval and stepping it off as shown. Laps for wiring and seaming should be allowed in the manner shown. Now the next step is to enclose a wire while the pattern for body is still in the flat with edges turned for seaming, as shown at "A." Next bend over the shoulder for a cover rest as at "B." This can be done over the edge of a bench or in a cornice brake. After this shape up the body to conform with outline of plan. The cover can be made as in detail "C."

Quite often a strainer is placed on the inside as at "D." The cover is hinged on one side as at "E" with a clasp as at "F." A bail can be attached as at "G." This pail can be made any desired dimension to suit the man who must carry it.

SHOWS HOW TO SPLICE A TUBE.

This is the neatest repair possible, where the fan has gotten loose and cut off some of the tubes or in a collision where the end of a fender has run in the front and cut off or broken the first and second row of tubes.

Your first step is to get the fins out of the way a little above and below the damaged part of tube. Then

Splicing a Tube.

with the hack saw blade, saw out the damaged part of tube. Clean the inside of tube, back about 3/16 inch so you feel sure it will solder.

Your next step is to cut a piece of tube, the same length as damaged part you sawed out and file a V in one end.

Form two collars 3/8 to 1/2 inch long of light brass,

that will slip loosely inside of tube. Solder your first collar (A) firmly in original tube, slip your other collar (B) full length into the notched end of your piece of tubing, now slip other end over collar (A), at the same time bringing in line with original tube; with a sharp slim pointed awl, working through notch, slip collar (B) one-half its length into original tube, and solder both ends. If you have been careful with the cleaning you have as good a job as a new tube at far less expense.

For your supply of tubing buy junk radiators and tear them up. There is lots of brass in them that can be utilized.

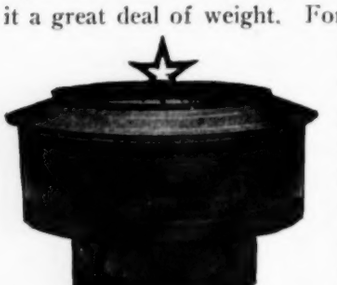
As I see it there are too many of these radiators getting into the junk man's hands that could be repaired, and what could not be, parts could be used to repair others. There is not a town in the United States so small but what a discarded radiator could be found.

F. L. CURFMAN.

Maryville, Missouri, March 4, 1918.

SAYS "STAR" VENTILATORS ARE USED BY GOVERNMENT.

As soon as the draft law was passed, the Government provided for many training camps and cantonments. The matter of fitting these out became, of course, of extreme importance. It was seen that the boys who are brave enough to fight for their country should be well taken care of. Consequently, when the cantonments were being equipped, the greatest diligence was exercised to obtain articles of the highest grade. This was especially true in the purchasing of ventilators because poor ventilators mean poor health. Therefore, when a firm is able to say, "The Government uses our ventilators," the statement carries with it a great deal of weight. For this reason, Merchant and Evans Company claims that one strong proof of the superiority of its "Star" Ventilators—one type of which is herewith illustrated—is the fact that they are used by the Government on various cantonments throughout the country, including the Plattsburg Barracks and the Great Lakes Naval Training Station. It is declared by the manufacturers that these ventilators are designed and constructed from the best materials by skillful workmen. There are three types of ventilators which the company announces its readiness to furnish: the Standard "Star" Ventilator, said to have a very large exhaust capacity and a rigid construction; the Fire-Retarding "Star" Ventilator, equipped with a fire retarding damper; and the Fire Retarding "Star" Skylight Ventilator, also equipped with a fire retarding damper, and said to be absolutely weather-proof. The Company maintains that these three types of ventilators will care for any method or any system of ventilation required from the application of stationary ventilators. Full information regarding these ventilators may be obtained by addressing Merchant and Evans Company at Philadelphia, Pennsylvania, or at any one of the offices in the following cities: Chicago, Illinois; Baltimore, Maryland; Atlanta, Georgia; Cleveland, Ohio; Wheeling, West Virginia; St. Louis, Missouri; and Kansas City, Missouri.



Standard "Star" Ventilator, made by Merchant and Evans Company, Philadelphia, Pennsylvania.

ADVISES USE OF SHEET ZINC IN BUILDING FREIGHT CARS.

A writer in *American Metal Market* says in connection with the present prospect that in order to relieve the congestion on the railroads of the United States and increase their facilities for transportation of materials, foods and munitions, the Government is contemplating the expenditure of around $600,000,000 for the building of freight cars. It would seem that suggestions are in order that might lead to the building of an improved type of freight car that would result in:

1st. Greater durability in life.
2nd. Perfect economy of maintenance.
3rd. Perfect sanitation.
4th. Great salvage from wrecked cars.
5th. Immense tonnage of sulphuric acid by-product, greatly needed by the Government for munitions and fertilizers.

All this can be accomplished by the substitution of sheet zinc in place of wood for the roofs, sides, ends and floors of freight cars and the use of steel frames, heavily galvanized or coated with zinc.

Wood has been used for about a hundred years for this purpose and the big repair shops of the railroads give ample testimony regarding the expense of upkeep of this brittle, perishable material. By adopting sheet zinc the cars would last for many times their present life as it is well known that sheet zinc roofs in Europe because of their durability have lasted for over 200 years.

Zinc is rust proof and while many cars have been built with sheet steel for the sides and roof, atmospheric conditions cause the steel to rust quickly and make it short lived for this purpose. The immense loss of lives, transported goods and railway equipment resulting from fires in railroad wrecks would be practically eliminated, and the salvage of materials would be a big saving, as sheet zinc would not burn and be stripped off wrecked cars, remelted and rolled into new sheets, time and time again, so that there would be practically no loss of materials. No paint would be required on zinc covered cars, thereby making another great saving of cost and maintenance.

Cars for transportation of meats, oils, syrups, vegetables or other products would be absolutely sanitary and instead of the wood absorbing and being contaminated by the saturation of deeaying products, the zinc lined freight car could, each trip, be scalded and thoroughly cleaned by the use of a steam hose and put in perfect sanitary condition. The steam would condense and wash down the roof, sides and floors and the water run out of the holes in the corners which could be equipped with removable plugs so that they would drain perfectly, no matter how the cars might set on

any grade. Such cars would be vermin proof and water proof and be the means of saving millions of dollars of claims for damages annually against the railroads.

No rust would accumulate as zinc is rust proof. Zinc is one of the cheapest of the metals and can be obtained in large quantities. The mines are already in operation to produce it in greater tonnage than ever before and zinc smelters and acid plants have been built during the last three years of sufficient capacity to handle any tonnage required for car purposes. Its principal use has been in the galvanizing of sheet iron and sheet steel, wire, nails, etc., for the prevention of rust.

In the production of sheet zinc, there would be an immense tonnage of sulphuric acid as a by-product, which would go a long way toward making up the present difference between the cost of wood and sheet zinc for car purposes. The United States Government is in great need of sulphuric acid for use in the manufacture of war munitions and is hard put to obtain a supply and the present estimate is that for the coming year there will be a shortage of one and one-half million tons.

Considering all these points of immense superiority of zinc over wood, it seems that the attention of the experts might be well applied to a study of this subject without delay.

SAYS NEW CONDUCTOR HOOK IS AS EASY TO DRIVE AS A NAIL.

Heretofore, when any one wanted to drive a conductor hook, he nearly always had to contend with bending, twisting, or breaking of the hook, and very often with bruised fingers. Mechanics, especially, complained about this. The construction of the old style conductor hooks made the driving of them a most difficult and painful matter. Now, however, it is possible to drive a conductor hook without any trouble whatsoever. This is so because they are constructed differently. For example, the "Direct Drive" Wrought Iron Conductor Hook, manufactured by the Milwaukee Corrugating Company, Milwaukee, Wisconsin, is made in such a way that it is said to be very easy to drive. The conductor hook illustrated herewith is the double square type, made for brick. It is claimed by the manufacturers that if one is able to drive a nail (and every one can do this), he can also drive his conductor hook. It is further stated that the full force of each blow in driving is obtained, at the same time making the drive easier and surer. In this conductor hook, according to the manufacturers, there is nothing in the way, and nothing to break. It is made for both wood and brick, round and square conductor pipe, single and double drive. It is spot welded and hot galvanized to prevent rusting, and is declared to be strong and dependable. A descriptive circular and price lists may be obtained by addressing the Milwaukee Corrugating Company, Milwaukee, Wisconsin, or branch office at Kansas City, Missouri.

"Direct Drive" Wrought Iron Conductor Hook Double-Square, for Brick.

TOM JOHNSING AND HIS MULE HAVE RETURNED TO THE LIMELIGHT.

Beneath the woolly pate of our African friend Tom Johnsing there is stored away much wisdom. His quaint spelling and sage observations are more helpful than many more dignified and ponderous expressions emanating from professors who never smile. It doesn't pay to take life too seriously. A mixture of humor is necessary to keep life's ferment from turning sour. Hence we hasten to print Tom Johnsing's latest contribution as follows:

To American Artisan and Hardware Record:

While fixin up our airplain on de roof las week i sweep wid me eye som good an durabel tin roofs al roun me, an sence tin roofin promis to becum so populer so soon our publisety work am done, i tink de trade lak to kno bout dis tinners naiberhood.

You se by de pectur dat we hab a quatet ob remahkabel tin roofs almos famus dey is, de fur one an de bigges one am on Conventon Hall.

Dis wus a big job an piculer shap roof to de whol roof am haf circkel and de drawin jes shos haf de roof, sectoin A am standin seme 1 in. high an sectin B am flat, seme wid cletes an not soddered.

Ony one tinner wus killed on dis job. He staht at A an slip over B on over C an to de groun below 30 feet mor. I doan kno de size ob dis roof, but it am so big, jes lake dat big ketel dat we mak at St. Louis to cook dat big turnip frum Chicago. Dat som gangs ob tinners on de job dident kno dat som one wus killed till dey pay his funeral at de loge. Dey wus no telfome nor rapid transmit in dem days.

Dis roof am 43 year old an is good enuf for uncle sam to use fo offisse, al de clerks mov in dere las month. De tin insid is jes brite like, not paneted nor lead coted, jes brite tin.

De nex roof on de lef am on a publik shool an dat tin roof am 42 years old.

De one in delow lef han cornre am jes on a plain store an is mor dan 45 years old.

Den comes de one in de midel dat am on de Giclas cornish studio an is 47 year old, an som more near by.

Al dese roofs look lak dey las forty year mor de way de ownrs keep dem in presarv condetoin wid paint, etc.

An dis am a grate tinshop naiberhood, dey wus 15 shops in 15 year jes roum dis quatet ob good roofs. ony five livin now, shops i mean, som make money git hitone an mov away, but as i no dem, al tru to sheet metel exeptin one he se dese good jobs ebery day an he go cheep an put a tar papr roof on his shop. I tink he am wurse dan pacifis. He help de enemy an is unloyel wid de help ob Wanderluster B M i lak tu sen him tu germeny. O yes he near eskape ma notic, dat blue meule, he jump in de spotlite jes wen de pfotograf man pull de trigger, an fo his friskness we make him work lak a wethervain, he mak a slip an git tu far behine on his pedestle and he doan pinte to de wether lak maud S., but he am mor humen cause he kick at de wind an wether lak meny peaple we kno, sure, des peaple know God mad de wether, but he meule kin be exused fo his ignanse, stil he improv hiself on his fadder, den why not chear him on, de sheat metel contrakers assocashun nead all de help dey kin git, den i say, Wanderluster! (go it), pay yor doos to yor lokal associashun, git in de harnes, buy a tiket an go to Milwalky an help de Nat. Associashun, forgit yor wiaf or any tin but talk sheat metal, an use it yosef.

Yors Truly,
TOM JOHNSING.

NOTES AND QUERIES.

Mendets.

From the Guarantee Hardware and Furniture Company, Stevens Point, Wisconsin.

Kindly advise who makes Mendets, a composition for mending kettles, etc.

Ans.—Collette Manufacturing Company, Collingwood, Ontario, Canada.

Address of Hess Warming and Ventilating Company.

From Charles Kruse, Richmond, Illinois.

Please advise where the Hess Warming and Ventilating Company is located.

Ans.—They are in the Tacoma Building at 5 North La Salle Street, Chicago.

Water Heating Garbage Burners.

From W. W. Martin, Tarpon Springs, Florida.

I would like to know who makes water heating garbage burners.

Ans.—Herbert Boiler Company, 140 Root Street, Chicago; Illinois Malleable Iron Company, 1801 Diversey Boulevard, Chicago; Kewanee Boiler Company, Kewanee, Illinois, and Sims Company, 18th and Whitley Avenue, Erie, Pennsylvania.

Lawn Mower Sharpeners.

From F. H. DeWeese, 422 South Lambert Street, Brazil, Indiana.

Can you tell me who manufactures lawn mower sharpeners?

Ans.—Coldwell Lawn Mower Company, Newburgh, New York; National Machine and Stamping Company, Detroit, Michigan; Richards-Wilcox Manufacturing Company, Aurora, Illinois; and Root-Heath Manufacturing Company, Plymouth, Ohio.

Corrugating Files.

From North Shore Hardware Company, Evanston, Illinois.

Kindly tell us who makes corrugating files to sharpen barber scissors.

Ans.—Delta File Works, Philadelphia; Heller Brothers Company, Newark, New Jersey; and Nicholson File Company, Providence, Rhode Island.

Malleable Iron Pipe Fittings.

From Kasbohm and Epps, Van Wert, Ohio.

Please give us the names of some manufacturers of malleable iron pipe fittings.

Ans.—W. D. Allen Manufacturing Company, 566 West Lake Street; Crane Company, 836 South Michigan Avenue; Illinois Malleable Iron Company, 1801 Diversey Parkway; and George B. Limbert and Company, 558 Fulton Street, all Chicago.

Retinning Copper Articles.

From Alex. Waltman, Bay City, Michigan.

Kindly let me have a formula for cleaning and retinning old copper vessels.

Ans.—Make the copper chemically clean by washing with a saturated solution of zinc in muriatic acid, the acid to be weakened with water to half strength after the dissolving of the zinc. Heat the copper vessel and pour in a small quantity of metal, of tin 1 part, lead 1 part, and shake or tip the vessel until the tinning runs over the parts. Or wipe the melted tin over the bare places with a cotton canvas pad.

2. Another good way is to thoroughly clean the article with sand and oxalic acid, and tin with a large copper soldering iron, using chloride of zinc and sal ammoniac (soldering fluid) for flowing the tin. It can also be done by heating the vessel and flushing melted tin over the surface, first sprinkling it with powdered resin. You may succeed in this after a few trials.

Fire Escapes.

From Satter and Moulton, Leland, Illinois.

We would like to know who manufactures fire escapes suitable for school houses.

Ans.—The Fred J. Meyers Manufacturing Company, 1313 South Adams Street, Hamilton, Ohio; Central Iron Works, Lake and Sangamon Streets, Chicago; Hanke Iron and Wire Works, 800 North Albany Avenue, Chicago; and F. P. Smith Wire and Iron Works, Lake and Dearborn Street, Chicago.

Kalameined Doors.

From Brouillet Sheet Metal Works, 271 Iowa Street, Dubuque, Iowa.

Please let us know who manufactures kalameined doors.

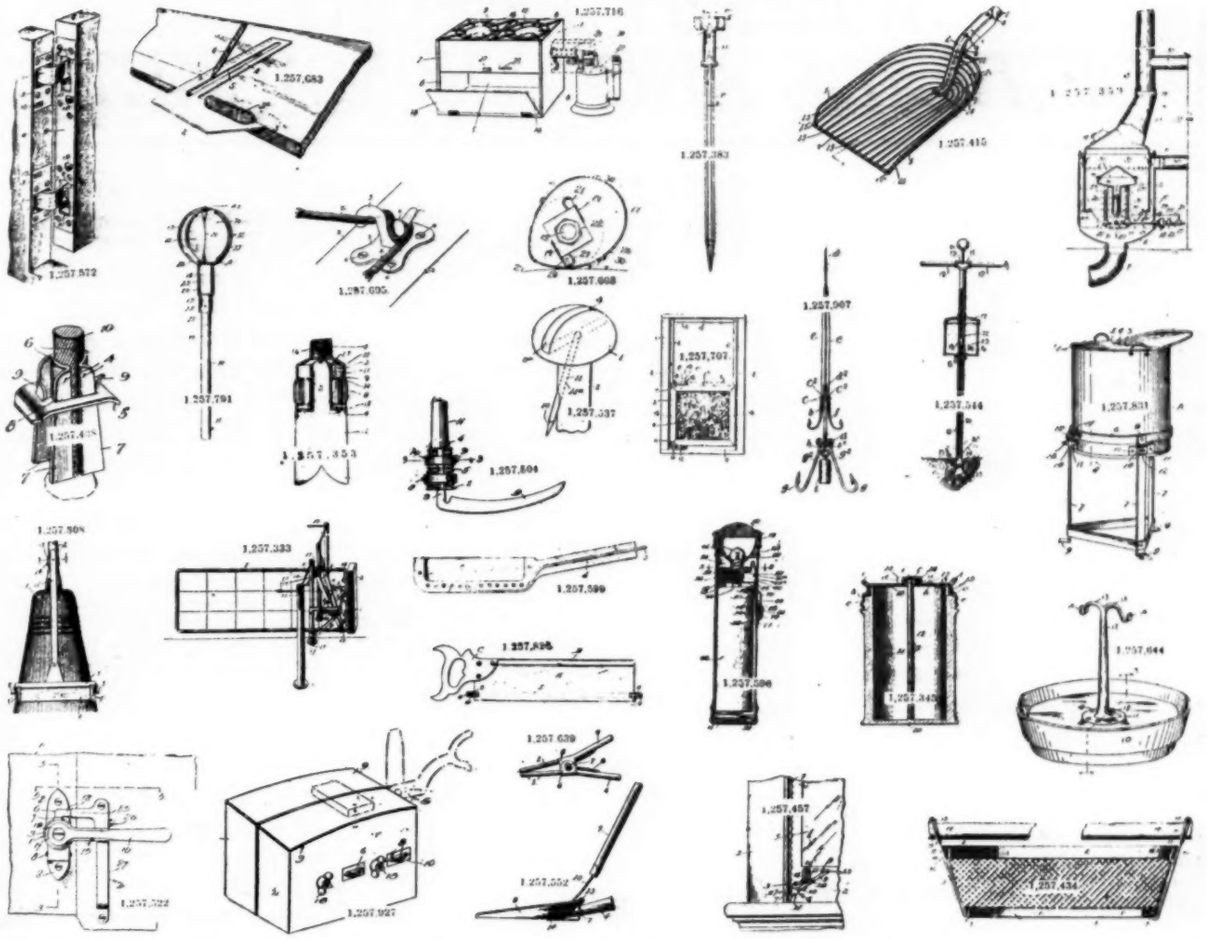
Ans.—Mesker Brother Iron Company, 421 South Sixth Street, St. Louis, Missouri; Perkins Manufacturing Company, University and Fairview Avenues, St. Paul, Minnesota; Thorp Fire Proof Door Company, 1600 Central Avenue, Minneapolis, Minnesota; and Western Sash and Door Company, Kansas City, Missouri.

ITEMS.

Clyde Wheeler has purchased a half interest in the sheet metal and plumbing shop of J. H. Temmink's hardware store at Greenville, Michigan.

The Briant Specialty Manufacturing Company, Indianapolis, Indiana, has been incorporated with a capital stock of $20,000 to manufacture metal specialties. The incorporators are Briant Sando, H. G. Parker and others.

NEW PATENTS.



1,257,308. Sweeper. Homer Le Roy Boyle, Lansing, Mich., assignor of one-third to Mark H. Smith, Lansing, Mich. Filed Aug. 6, 1917.

1,257,333. Gate. Thomas Levi Fawick, Waterloo, Iowa. Filed Jan. 21, 1916.

1,257,345. Combined Salt and Pepper Shaker. Edward E. Harris, Tulsa, Okla. Filed Oct. 17, 1916.

1,257,353. Rotary Boring Drill. Howard R. Hughes, Houston, Tex. Filed Aug. 6, 1917.

1,257,359. Garbage Incinerator. Nels C. Johnson, Racine, Wis. Filed Nov. 20, 1916.

1,257,383. Combination Tool. Andrew P. Olson, Chicago, Ill. Filed Nov. 1, 1917.

1,257,415. Sifting Shovel. Benjamin H. Smith, Niles Mich., assignor to Michigan Wire Goods Co., Niles, Mich. Filed Dec. 3, 1917.

1,257,437. Sieve. Charles C. Wickwire, Cortland, N. Y. Filed Jan. 12, 1918.

1,257,438. Sash Cord Fastener. Herrmann A. Wulf, Norwich, Conn. Filed Sept. 13, 1917.

1,257,457. Window Sash Holder and Latch. Louis Jos. Brune, Algiers, La. Filed Oct. 18, 1917.

1,257,504. Scythe Blade Fastener. Earl E. Lippert, Stroud, Okla. Filed Aug. 20, 1917.

1,257,522. Refrigerator Door Fastener. Floyd N. Perkins, Freeport, Ill. Filed Feb. 8, 1917.

1,257,537. Screw Lock and Slot Filler. Fred Schumann, Brooklyn, N. Y. Filed Nov. 24, 1914.

1,257,544. Weed Destroyer. Theodore T. Snow, Hot Springs, S. D. Filed May 21, 1917.

1,257,552. Handle Attachment for Dust Pans. Norman W. Tumblinson, Baltimore, Md. Filed Mar. 15, 1917.

1,157,572. Hinge. William H. Appleby, Chicago, Ill. Filed Sept. 7, 1916.

1,257,596. Pocket Hand Lamp. Joseph C. Ford, Madison, Wis., assignor to French Battery & Carbon Co., Madison, Wis. Filed May 17, 1917.

1,257,599. Electric Heater. William S. Hadaway, Jr., New York, N. Y. Filed Sept. 5, 1911.

1,257,603. Tack Puller. Jacob D. Hatch, Brockton, Mass., assignor of one-half to Thomas Bostock, George Bostock, and James Bostock, doing business under the firm-name and style of Thomas Bostock & Sons, Brockton, Mass. Filed Apr. 13, 1917.

1,257,639. Clothes Pin. Ruben E. Rosenberger, Dewey, Ariz. Filed Aug. 11, 1916.

1,257,644. Nut Bowl. Hulbert J. Smith, Indianapolis, Ind. Filed May 17, 1915.

1,257,683. Combination Tool. Charles C. Defenbaugh, Toledo, Ohio, assignor of one-half to Frank W. Caughlin, Toledo, Ohio. Filed Apr. 29, 1915.

1,257,695. Cleat. William Gadke, Philadelphia, Pa. Filed Jan. 22, 1916.

1,257,707. Window Screen. Charles W. Hinchcliffe, Lawrence, Mass. Filed Aug. 24, 1917.

1,257,716. Torch Stove. Frank Leeper, Los Angeles, Cal. Filed July 11, 1917.

1,257,791. Fruit Picker. Harry N. Bigger, Oneida, N. Y. Filed May 29, 1917.

1,257,826. Saw Gage. Stephen Ray Emerson, Creston, Iowa. Filed Mar. 28, 1916.

1,257,831. Bucket. Eugene Ewers and Frederick Ludford, Eugene, Ore. Filed Apr. 7, 1915.

1,257,907. Fishing Tackle. Charles W. Martin, Brooklyn, N. Y. Filed Nov. 6, 1917.

1,257,927. Scissors and Shears Sharpening Device. William M. Reagan, Tacoma, Wash. Filed Oct. 31, 1917.

WEEKLY REPORT OF TRADE AND THE MARKETS

INCREASED PRODUCTION OF RAILS IS CHIEF TOPIC IN STEEL TRADE.

All authorities on the subject are agreed that there is urgent need of railroad reconstruction. The winning of the war, leading steel men say, is as much dependent upon the rehabilitation of the railroads as upon the construction of ships. If the war lasts two years more, the railroads will form the key to success, it is contended.

Uppermost in the minds of the trade, is a question of the ability of the mills and factories to meet the demands an adequate reconstruction program will present. Recent compilations by an expert place the tonnage of rails necessary to put the railroads in first-class shape at 10,000,000 tons. Such tonnage, however, is out of the question for two reasons—first, the trade would find it impossible to meet the demand for the steel necessary for the tonnage, and, second, the mills could not roll the rails if the trade could supply the steel. So the program of reconstruction of necessity will fail to measure up to the full demands of the situation.

The government reconstruction program has not been fully outlined, but enough is known to indicate the large demands to be made upon the trade. The adoption of a standardized car will greatly accelerate car production, as will standardization of engine parts accelerate the production of motive power. The immediate need is more engines.

In addition, more sidings to expedite the two-way movement of trains, more yardage for unloading and more double tracks must be provided, if recent conditions are to be made impossible next year and thereafter. Except the roads which form a part of the routes to the seaboard, nothing towards their reconstruction can be attempted now. The need of improvement of main lines and terminal was almost tragically illustrated by the conditions which tied up hundreds of ships this winter. Hence it is said in steel circles that a repetition of such experience would be chargeable to criminal negligence.

In view of the light business done during the month, the reduction of the unfilled tonnage on the books of the leading interest by approximately 190,000 tons indicates that shipments were kept well in line with the production rate. The government business done by the trade is no longer made public and advance estimates of unfilled tonnage have been abandoned. Whatever value they had as indicates disappeared long ago.

STEEL.

During the week a somewhat better demand for steel products has been discernible, but at best the demand is still light. As formerly there is an insistent demand for tubular goods used in oil development and transport. There is heavier demand from distributers for standard steel pipe, as with the light shipments of the past two or three months stocks have grown light and the spring distribution is impending. For sheets there is a fair demand, for early delivery, but the sheet mills are already well filled against the present rate of production, which is about 75 per cent of capacity. The demand for wire products is light, although it has increased somewhat.

The most important business in prospect is the buying of the United States Railroad Administration. The steel trade is eminently well satisfied with the selection of Judge Lovett to head the purchasing department. They regard as distinctly happy the choice of a man who was not pressed for funds when he was a railroad executive, but who was in financial position to buy when he desired to do so. They observe, also, that the Union Pacific has not been a stickler for specialization in equipment, and that conduces to tonnage.

COPPER.

Domestic consumers, other than those producing war munitions, are buying very little copper from day to day and while some delay is reported in making shipments to such consumers it is not of special significance with output increasing. Several additional contracts for shells and for ordnance have been given out by the Government in the last few days and some very large contracts are pending. Copper requirements resulting from this business, of course, will be taken care of by the Government.

Smelter output in this country is increasing and there is reason to anticipate that refinery output will be at the rate of at least 200,000,000 pounds a month by the end of the first quarter. The most encouraging feature of the copper industry today, is the prospect of a further large increase in importations of unwrought copper from South America and from Canada in the next few months. Even Mexican properties, operated by American capital, are increasing output. It is estimated that average total importations this year will run as high as 24,000 to 25,000 tons per month. Last year foreign material was received here for treatment at the rate of nearly 20,000 tons a month. Instead of there being a decrease in copper production in South America recent reports indicate a further gain.

TIN.

The acute scarcity of spot tin of all grades continues to be a salient feature of the market. Although prospective buyers are bidding from 90 to 95 cents a pound, there are no offerings forthcoming. Even offerings

of Chinese No. 1 and Banca tin on the spot are missing and nearby shipments are hard to locate. Further shipments from the Straits this side of June are all taken up and under contract and the steadily advancing market price on Singapore is proof that the demand can hardly be satisfied. March shipments of Banca tin from Batavia are quoted at 74½@75 cents.

LEAD.

The St. Louis market is steady at 7.25 cents. Independent producers who have recently re-entered the market as sellers of lead for late March and early April shipments advise that they are booking a satisfactory volume of business on the basis of the Trust prices for eastern deliveries. Many buyers are holding off with the expectation that the production will be increased, and that the Mexican offerings will have a depressing effect upon prices, but the traffic situation is still the chief feature of the market. The strength in the lead ore market tends to keep sellers firm in their demands, and there is said to be a fair inquiry.

SOLDER.

There have been no changes in the market for solder, the prices remaining as follows: XXX Guaranteed, ½ & ½, 48½ cents; Commercial, ½ & ½, 45 cents; and Number 1 Plumbers', 41½ cents.

SPELTER.

Reports from the producers of high grade spelter state that there is a demand for all that they are making, and it is believed that the large stocks of this grade which were accumulated during the summer and early winter months have been absorbed by consumption. Certainly none of the smaller producers have anything to offer for prompt shipment, and the larger producers who are offering mostly on government orders are not dependent on outside business. The fixed price for grade A as 12.00c.

TIN PLATE.

Operations of the tin plate mills are from 80 to 85 per cent of capacity. Stocks in warehouses are accumulating, owing to a shortage of cars for their shipments. Unless relief is forthcoming soon in the way of more cars, the storage capacity will become exhausted and compel producers to curtail output. The situation is serious and there has been a large loss in production.

SHEETS.

Reports from Cleveland are to the effect that prices of sheets have been increased by one jobber to 0.035 cents per pound. New price for Number 28 black is 6.385 cents; Number 28 galvanized, 7.635 cents and Number 10 blue annealed, 5.385 cents. It is said that these changes were made merely to conform with the Government's recommendations made some time ago that jobbers add to their prices the carload freight rate from Pittsburgh.

OLD METALS.

A severe shortage of scrap is very probable in the near future in the Chicago market. Various factors inspire to keep the market in a state of uncertainty and to restrain trading. Only a few cars are being shipped in some instances where consumers have contracts for thousands of tons. Wholesale dealers' quotations in the Chicago district, which may be considered nominal, are as follows: Old steel axles, $42.42; old iron axles, $42.42; steel springs, $31.25; Number 1 wrought iron, $31.25; Number 1 cast iron, $27.00 to $27.50, all net tons. Prices for non-ferrous metals are as follows, per pound: Light copper, 19 cents; light brass, 11¼ cents; lead, 5½ cents; zinc, 5 cents; cast aluminum, 21 cents.

PIG IRON.

Increased interest in second half iron has been noted by consumers in the eastern Pennsylvania district, through a greater volume of inquiry. One of the largest new inquiries is that from a Pittstown, Pennsylvania, consumer who wants 6,000 thousand tons of Malleable; 2,000 tons of Basic and some Foundry, all for second half. Other new inquiries call principally for Foundry and involve a large tonnage in the aggregate. Much pressure continues to be exerted for iron for shipment prior to July 1st. Furnaces generally continue to pursue the policy of not quoting for second half delivery and of accepting orders only when practically forced by regular customers to accommodate them. Such sales do not exceed about 10,000 tons and are made up mostly of Foundry grades.

The Matthew Addy Company's market report for March 16th says that, as illustrating what has happened to the railroads, we had iron shipped from Alabama in early December which was delivered in March. We know of several cars which were delivered in December on a siding in a southern furnace town and which were not switched to the plant to which they were consigned until last week. That meant that the cars were locked up, idle, out of use. Those cars in ordinary times would have made half a dozen round trips and could normally have done from six to twelve times the amount of work they really did. This is why empties have been so scarce, and this is why industry has been so hampered by the railroads. The specific cases we have cited can be multiplied a thousand times. Now that we are having seasonable weather the railroad deadlock is being slowly unlocked. The railroads are again being opened more freely to traffic. The trouble is not over by any means, but the situation has so improved that the future is distinctly more promising.

As present prices for iron were established subject to revision April 1st, and the whole trade is much exercised over the question as to whether prices are to be changed or not. As far as iron masters are concerned, they wish no change. They have become accustomed to operating under the present schedules and believe that any change would simply upset business. Every energy of the trade is being directed to furthering the war aims of the Government. All other problems must be made secondary to this supreme purpose, and the trade is of one mind in this regard.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS.

PIG IRON.

Basic	$33 00
Northern Pdy., No. 2	33 00
Southern Pdy., No. 2	37 50
Lake Sup. Charcoal	37 50
Malleable	33 50

FIRST QUALITY BRIGHT TIN PLATES.

		Per Box
IC	14x20	$16 20
IX	14x20	18 15
IXX	14x20	20 10
IXXX	14x20	21 55
IXXXX	14x20	23 00
IC	20x28	32 40
IX	20x28	36 30
IXX	20x28	40 20
IXXX	20x28	43 10
IXXXX	20x28	46 00

COKE PLATES.

Cokes, 180 lbs	20x28	$22	30
Cokes, 200 lbs	20x28	22	50
Cokes, 214 lbs	IC 20x28	22	90
Cokes, 270 lbs	IX 20x28	24	50

BLUE ANNEALED SHEETS.

No. 10	per 100 lbs.	$5 45
No. 12	per 100 lbs.	5 50
No. 14	per 100 lbs.	5 55
No. 16	per 100 lbs.	5 65

ONE PASS COLD ROLLED BLACK

No. 18-20	per 100 lbs.	$6 25
No. 22-24	per 100 lbs.	6 30
No. 26	per 100 lbs.	6 35
No. 27	per 100 lbs.	6 40
No. 28	per 100 lbs.	6 45

GALVANIZED

No. 16	per 100 lbs.	$ 6 95
No. 18-20	per 100 lbs.	7 10
No. 22-24	per 100 lbs.	7 25
No. 26	per 100 lbs.	7 40
No. 27	per 100 lbs.	7 50
No. 28	per 100 lbs.	7 70
No. 30	per 100 lbs.	8 20

POLISHED SHEET STEEL.

No. 24	per 100 lbs.	$9 80
No. 26	per 100 lbs.	9 85
No. 27	per 100 lbs.	9 90
No. 28	per 100 lbs.	10 00

SMOOTH SHEET STEEL.

		Per 100 lbs.
Wood's Smooth	No. 20	$9 25
" "	No 22-24	9 30
" "	No 25-26	9 35
" "	No. 27	9 40
" "	No. 28	9 50

PATENT PLANISHED SHEET IRON.

Patent Planished Sheet Iron, 100 lbs., base No. 28 ..... $12 75

SOLDER.

XXX Guaranteed ½ & ½	per lb.	48½c
Commercial ½ & ½	"	45c
No. 1 Plumbers	"	41½c

SPELTER

In Slabs 8½c

SHEET ZINC.

Cash lots $22 00
Less than Cash lots ..$22 50 to $25 00

COPPER.

Copper sheet, base 31½c

LEAD.

American Pig	$7 75
Bar	8 25

Sheet.

Full coils	per 100 lbs.	$10 25
Cut coils	per 100 lbs.	10 50

TIN.

Pig tin	Nominal
Bar tin	Nominal

HARDWARE.

ADZES.

Carpenters'.
Plumbs 15%

Coopers'.
Barton's 15%
White's 15%

Railroad.
Plumbs 20%

AMMUNITION.

Caps, Percussion—per 1,000.
F. L., Waterproof, 1-10s 32%
G. D 32%
Musket 32%

Shells, Loaded—
Loaded with Black Powder 32%
Loaded with Smokeless Powder, medium grades 32%
Loaded with Smokeless Powder, high grade 32%

Winchester:
Smokeless Repeater Grade 32%
Smokeless Leader Grade 32%
Black Powder 32%

U. M. C.
Nitro Club 32%
Arrow 32%
New Club 32%

Gun Wads—per 1000

Winchester 7-8 gauge		$2 25
" 9-10 gauge		1 94
" 11-28 gauge		1 63

Powder.

		Each
DuPont's Sporting, kegs		11 25
" "	½ kegs	5 90
" "	¼ kegs	3 10
DuPont's Canisters, 1-lb		56
" "	½-lb	32
" "	¼-lb	22
" Smokeless drums		43 50
" "	kegs	22 00
" "	½-kegs	11 25
" "	¼-kegs	5 75
" "	canisters	1 00
L. & R. Orange, Extra Sporting kegs		11 25
L. & R. Orange, Extra Sporting ½-kegs		5 90
L. & R. Orange, Extra Sporting ¼-keg		1 30
L. & R. Orange, Extra Sporting 1lb. canisters		56
L. & R. Orange, Extra Sporting ½-lb. canisters		32
L. & R. Orange, Extra Sporting ¼-lb. canisters		22
Hercules "E. C." and "Infallible" 50 can drums		43 50
Hercules "E. C." kegs		22 00
Hercules "E. C." ½-kegs		11 25
Hercules "Infallible," 25 can drums		22 00
Hercules "Infallible," 10 can drums		9 00
Hercules "E.C." ¼-kegs		5 75
Hercules "E.C." and "Infallible" canisters		1 00
Hercules W. A. .30 Cal. Rifle, canisters		1 25
Hercules Lightning Rifle, canisters		1 25
Hercules Sharpshooter Rifle, canisters		1 25
Hercules Unique Rifle, canisters		1 50
Hercules Bullseye Revolver, canisters		1 00

ANVILS.

Trenton, 70 to 80 lbs. ..... 9½c per lb.
Trenton, 81 to 150 lbs. ..... 9½c per lb.

ASBESTOS.

Board and Paper, up to ¼" .. 17c per lb.
Thicker ... 18c per lb.

AUGERS.

Boring Machine 60%
Irwin's ..... Nets
Carpenter's Nut ..... 50&10%

Hollow.

Bonney's	per doz.	$30 00
Stearns, No. 3	" "	60 00

Post Hole.

Digwell, 8-inch	per doz.	$12 50
Iwan's Post Hole and Well		Nets.
Vaughan's, 4 to 9-in.	per doz.	10 25

Ship.
Ford's, with or without screw ... 15%
Snell's " " " ... 15%

AWLS.

Brad.

No. 3 Handled	per doz.	$0 50
No. 1050 Handled	"	1 05
Shouldered, assorted 1 to 4,	per gro.	4 00
Patent asst'd, 1 to 4	"	85

Harness.

Common	"	1 05
Patent	"	1 00

Peg.

Shouldered	"	1 60
Patent	"	75

Scratch.

No. 1 handled	per doz.	65
No. IS, socket han'ld.	"	1 35
No. 7 Stanley	"	1 95

AXES.

Boy's Handled.
Niagara ..... " 9 25

Broad.

Plumbs, West, Pat		List
" Can. Pat		$53 00
" Firemen's (handled)	per doz.	$19 00

Single Bitted (handled).

Warren Silver Steel	15 50
Warren Blue Finished	15 00
Matchless Red Pole	14 00

Single Bitted (without handles).

Warren Silver Steel	13 50
Warren Blue Finished	12 50
Matchless Red Pole	11 50

Double Bitted (without handles).
Warren's Natl. Blue, 3½ to 4½ lb ..... per doz. 17 50
The above prices on axes of 3 to 4 lbs. are the base prices.
3½ to 4½ lbs. advance 25c.
4 to 5 lbs. advance 50c.
4½ to 5½ lbs. advance 75c.

BAGS, PAPER NAIL.

Pounds	10	16	20	25
Per 1,000	$5 00	6 50	7 50	9 00

BALANCES, SPRING.

Pelouze 20%

BARS, CROW.

Pinch or Wedge Point, per cwt .. $8 00

BASKETS.

Clothes.

Small Willow	per doz.	10 00
Medium "	"	11 50
Large "	"	13 50

Galvanized Steel.

	½ bu.	1 bu.	1½ bu
Per doz	$8 00	$11 50	15 00

BEATERS.

Carpet.

	Per doz.
No. 17 Tinned Spring Wire	$ 1 10
No. 18 Spring Wire coppered	1 40
No. 10 Preston	1 10

Egg.

	Per doz.
No. 50 Imp. Dover	$ 1 10
No. 102 " " tinned	1 35
No. 150 " " hotel	2 10
No. 10 Heavy hotel tinned	2 10
No. 13 " " "	3 30
No. 15 " " "	3 60
No. 18 " " "	4 50

BELLOWS.

Blacksmiths' 40%

Hand.

	8	9	10	12
Per doz.	$8 00	9 00	10 00	12 75

Moulders'.
12-inch ..... Per doz. 15 00

BELLS.

Call.
3-inch Nickeled Rotary Bell, Bronzed base ..... per doz. $5 00

Cow.
High Grade 60%
Kentucky 35%

Door.

	Per doz.
New Departure Automatic Rotary	$7 50
3 -in. Old Copper Bell	5 00
3 -in. Old Copper Bell, fancy	7 00
3 -in. Nickeled Steel Bell	5 50
3½-in. Nickeled Steel Bell	6 00

Hand.
Hand Bells, polished 15%
White Metal 15%
Nickel Plated 10%
Swiss 15%
Silver Chime 10%

Miscellaneous.
Church and School, steel alloys ... 30%

Farm, lbs	40	50	75	100
Each	$2 25	3 00	4 00	5 50

BEVELS, TEE

Stanley's, rosewood handle, new list ..... Nets
Stanley's iron handle ..... Nets

BINDING, OILCLOTH.

Zinced 60%
Brass ..... 40&10%
Brass, plated ..... 60&10%

BITS.

Auger.
Jenning's Pattern 50%
Ford's Car and Machine 15%
Ford's Ship 30%
Irwin 35%
Russell Jenning's 30%
Clark's Expansive ..... 50&5%
Steer's " Small list, $22 00 .. 25%
" " Large " $26 00 .. 25%
Irwin Car ..... 35&10%
Ford's Ship Auger pattern Car 15%

Center 10%

Countersink.

No. 18 Wheeler's	per doz.	$1 80
No. 20	"	2 40
American Snailhead	"	1 10
" Rose	"	1 30
" Flat	"	1 20
Mahew's Flat	"	1 60
" Snail	"	1 50

Dowell.
Russell Jennings 30%

Gimlet.
Standard Double Cut 25%
German Pattern ..... per doz. $0 75
German ..... " 80
Gouge ..... " 80
Spoon ..... " 15%
Countersink ..... " 1 30

Reamer.
Jenning's Square ..... " 2 50
Standard Square ..... " 2 00
American Octagon ..... " 1 75

Screw Driver.
No. 7 Common ..... " 75
No. 1 Triumph ..... " 1 25